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DICTIONARY FILE UPDATES: 3 MAY 2006 HIGHEST RN 882736-15-4

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*

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=> FILE HCAPLU
FILE 'HCAPLUS' ENTERED AT 15:58:44 ON 04 MAY 2006
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FILE COVERS 1907 - 4 May 2006 VOL 144 ISS 19
FILE LAST UPDATED: 3 May 2006 (20060503/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> D QUE

L14 729854 SEA FILE=REGISTRY ABB=ON ((NA OR K OR MG OR CA OR SR OR NI OR
CO OR SI OR TI OR B OR AL OR SN OR MN OR CR OR FE OR V OR
ZR) (L) (P OR S OR W OR F) (L) O) /ELS
L15 137262 SEA FILE=REGISTRY ABB=ON L14 NOT 1-400/NR
L16 523418 SEA FILE=HCAPLUS ABB=ON L15
L17 10236 SEA FILE=HCAPLUS ABB=ON L16 (L) DEV/RL
L18 1589 SEA FILE=HCAPLUS ABB=ON L17 AND BATTER?
L19 10 SEA FILE=HCAPLUS ABB=ON L18 AND SURFACE? (3A) TREAT?
L22 10 SEA FILE=HCAPLUS ABB=ON L18 AND SURFACE? (3A) ?TREAT?
L24 2 SEA FILE=HCAPLUS ABB=ON L18 AND ?TREAT? (3A) ?LAYER?
L26 4130 SEA FILE=HCAPLUS ABB=ON L16 AND BATTER?
L27 10 SEA FILE=HCAPLUS ABB=ON L26 AND ?TREAT? (3A) ?LAYER?
L28 51 SEA FILE=HCAPLUS ABB=ON L26 AND SURFACE? (3A) ?TREAT?
L29 54 SEA FILE=HCAPLUS ABB=ON L19 OR L22 OR L24 OR L27 OR L28
L30 20 SEA FILE=HCAPLUS ABB=ON L29 AND (LI OR LITHIUM)
L31 1 SEA FILE=REGISTRY ABB=ON LITHIUM/CN
L32 80726 SEA FILE=HCAPLUS ABB=ON L31
L33 3 SEA FILE=HCAPLUS ABB=ON L29 AND L32
L34 20 SEA FILE=HCAPLUS ABB=ON L30 OR L33
L36 47 SEA FILE=HCAPLUS ABB=ON L29 AND ELECTROCHEMICAL/SC, SX
L37 20 SEA FILE=HCAPLUS ABB=ON L34 AND L36
L38 6 SEA FILE=HCAPLUS ABB=ON (TREAT? (3A) BASE OR COVER? (3A) LAYER)
AND L26
L39 26 SEA FILE=HCAPLUS ABB=ON L37 OR L38
L40 87 SEA FILE=HCAPLUS ABB=ON L26 AND LITHIAT?
L41 0 SEA FILE=HCAPLUS ABB=ON (TREAT? (3A) BASE OR COVER? (3A) LAYER)
AND L40
L43 0 SEA FILE=HCAPLUS ABB=ON L40 AND ?TREAT? (3A) ?LAYER?
L44 26 SEA FILE=HCAPLUS ABB=ON L39 OR L41 OR L43

=> D L44 BIB ABS IND HITSTR 1-26

L44 ANSWER 1 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2006:340654 HCAPLUS
TI Lithium anode with lithium mixed oxide protective
coating for secondary lithium battery
IN Ukaji, Masaya; Mino, Shinji; Shibano, Yasuyuki; Ito, Shuji
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | JP 2006100083 | A2 | 20060413 | JP 2004-283846 | 20040929 |
| PRAI | JP 2004-283846 | | 20040929 | | |

AB The anode comprises a Li or a Li alloy anode coated
with (1) a pretreatment layer containing a Li
ion conductive substance and (2) a protective layer comprising LixPTyOz (T
= Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zr, Nb, Mo, Ru, Ag, Ta, W, Pt, and/or Au;
x = 2.0-7.0; y = 0.01-1.0; z = 3.5-8.0) or LixMOyNz [M = Si, B, Ge, Al, C,
Ga, and/or S; (a) x = 0.6-1.0, y = 1.05-1.99, z = 0.01-0.5, (b) x =
1.6-2.0, y = 2.05-2.99, z = 0.01-0.5, (c) x = 1.6-2.0, y = 3.05-3.99, z =
0.01-0.5, or (d) x = 4.6-5.0, y = 3.05-3.99, z = 0.01-0.5]. Secondary

lithium battery equipped with the anode is also claimed. Since the protective layer has high stability to water and ion conductivity, deterioration of the anode is prevented, and the battery has excellent cycling performance.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery anode lithium mixed oxide protective coating; anode lithium mixed oxynitride protective coating battery; lithium battery anode protective coating water resistance ion cond

IT Battery anodes
(anode having lithium mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for Li battery)

IT Coating materials
(water-resistant; anode having lithium mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for Li battery)

IT Lithium alloy, base
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(anode base; anode having lithium mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for Li battery)

IT 7439-93-2, Lithium
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(anode base; anode having lithium mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for Li battery)

IT 10377-52-3, lithium phosphate (Li₃PO₄) 14332-24-2
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(pretreatment coating; anode having lithium mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for Li battery)

IT 782495-37-8
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(protective coating, pretreatment coating; anode having lithium mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for Li battery)

IT 554-13-2 10102-24-6 10377-48-7 12315-28-5 13453-69-5
782495-23-2 782495-24-3 782495-25-4
782495-26-5 782495-27-6 782495-28-7
782495-29-8 782495-30-1 782495-31-2 782495-32-3
782495-33-4 782495-34-5 782495-35-6 782495-36-7 782495-38-9
782495-39-0 782495-41-4 782495-42-5 782495-43-6 782495-44-7
782495-47-0 782495-48-1 782495-49-2
782495-50-5 782495-51-6 782495-52-7
782495-53-8 782495-54-9 782495-55-0 782495-56-1
782495-57-2 782495-58-3 782495-59-4 782495-60-7
782495-63-0 782495-64-1 782495-65-2 782495-66-3
782495-67-4 782495-69-6 782495-70-9 782495-72-1 782495-74-3
882681-95-0 882682-14-6 882682-16-8
882682-19-1 882682-30-6 882682-32-8 882682-35-1
882682-38-4 882682-40-8 882682-42-0 882682-44-2
882682-46-4 882682-48-6 882682-50-0 882682-52-2 882682-54-4
882682-56-6 882682-58-8 882682-60-2 882682-62-4 882682-64-6

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses) (protective coating; anode having lithium mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for Li battery)

IT 7439-93-2, Lithium

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses) (anode base; anode having lithium mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for Li battery)

RN 7439-93-2 HCAPLUS

CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

IT 782495-23-2 782495-24-3 782495-25-4

782495-26-5 782495-27-6 782495-28-7

782495-29-8 782495-31-2 782495-47-0

782495-48-1 782495-49-2 782495-50-5

782495-51-6 782495-52-7 782495-54-9

782495-60-7 782495-63-0 882681-95-0

882682-14-6 882682-16-8 882682-19-1

882682-44-2 882682-54-4

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses) (protective coating; anode having lithium mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for Li battery)

RN 782495-23-2 HCAPLUS

CN Lithium titanium metaphosphate oxide (Li_{2.8}Ti_{0.2}(PO₃)O_{0.9}) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.9 | 17778-80-2 |
| O3P | 1 | 15389-19-2 |
| Ti | 0.2 | 7440-32-6 |
| Li | 2.8 | 7439-93-2 |

RN 782495-24-3 HCAPLUS

CN Lithium vanadium metaphosphate oxide (Li_{2.8}V_{0.2}(PO₃)O_{0.9}) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.9 | 17778-80-2 |
| O3P | 1 | 15389-19-2 |
| V | 0.2 | 7440-62-2 |
| Li | 2.8 | 7439-93-2 |

RN 782495-25-4 HCAPLUS

CN Chromium lithium metaphosphate oxide (Cr_{0.2}Li_{2.8}(PO₃)O_{0.9}) (9CI) (CA INDEX NAME)

| Component | Ratio | Component |
|-----------|-------|-----------|
|-----------|-------|-----------|

| | | Registry Number |
|-------|-------|-----------------|
| ===== | ===== | ===== |
| O | 0.9 | 17778-80-2 |
| O3P | 1 | 15389-19-2 |
| Cr | 0.2 | 7440-47-3 |
| Li | 2.8 | 7439-93-2 |

RN 782495-26-5 HCAPLUS

CN Lithium manganese metaphosphate oxide (Li_{2.8}Mn_{0.2}(PO₃)O_{0.9}) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.9 | 17778-80-2 |
| O3P | 1 | 15389-19-2 |
| Mn | 0.2 | 7439-96-5 |
| Li | 2.8 | 7439-93-2 |

RN 782495-27-6 HCAPLUS

CN Iron lithium metaphosphate oxide (Fe_{0.2}Li_{2.8}(PO₃)O_{0.9}) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.9 | 17778-80-2 |
| O3P | 1 | 15389-19-2 |
| Li | 2.8 | 7439-93-2 |
| Fe | 0.2 | 7439-89-6 |

RN 782495-28-7 HCAPLUS

CN Cobalt lithium metaphosphate oxide (Co_{0.2}Li_{2.8}(PO₃)O_{0.9}) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.9 | 17778-80-2 |
| O3P | 1 | 15389-19-2 |
| Co | 0.2 | 7440-48-4 |
| Li | 2.8 | 7439-93-2 |

RN 782495-29-8 HCAPLUS

CN Lithium nickel metaphosphate oxide (Li_{2.8}Ni_{0.2}(PO₃)O_{0.9}) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.9 | 17778-80-2 |
| O3P | 1 | 15389-19-2 |
| Ni | 0.2 | 7440-02-0 |
| Li | 2.8 | 7439-93-2 |

RN 782495-31-2 HCAPLUS

CN Lithium zirconium metaphosphate oxide (Li_{2.8}Zr_{0.2}(PO₃)O_{0.9}) (9CI) (CA INDEX NAME)

| | | |
|-----------|-------|-----------|
| Component | Ratio | Component |
|-----------|-------|-----------|

| | | Registry Number |
|-------|-------|-----------------|
| ===== | ===== | ===== |
| O | 0.9 | 17778-80-2 |
| O3P | 1 | 15389-19-2 |
| Zr | 0.2 | 7440-67-7 |
| Li | 2.8 | 7439-93-2 |

RN 782495-47-0 HCAPLUS

CN Lithium vanadium oxide phosphate (Li_{2.8}V_{0.2}O₄(PO₄)) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.4 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| V | 0.2 | 7440-62-2 |
| Li | 2.8 | 7439-93-2 |

RN 782495-48-1 HCAPLUS

CN Chromium lithium oxide phosphate (Cr_{0.2}Li_{2.8}O₄(PO₄)) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.2 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| Cr | 0.2 | 7440-47-3 |
| Li | 2.8 | 7439-93-2 |

RN 782495-49-2 HCAPLUS

CN Lithium manganese oxide phosphate (Li_{2.8}Mn_{0.2}O₄(PO₄)) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.3 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| Mn | 0.2 | 7439-96-5 |
| Li | 2.8 | 7439-93-2 |

RN 782495-50-5 HCAPLUS

CN Iron lithium oxide phosphate (Fe_{0.2}Li_{2.8}O₄(PO₄)) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.17 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| Li | 2.8 | 7439-93-2 |
| Fe | 0.2 | 7439-89-6 |

RN 782495-51-6 HCAPLUS

CN Cobalt lithium oxide phosphate (Co_{0.2}Li_{2.8}O₄(PO₄)) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
|-----------|-------|------------------------------|

| Component | Ratio | Component Registry Number |
|-----------|-------|---------------------------|
| O | 0.17 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| Co | 0.2 | 7440-48-4 |
| Li | 2.8 | 7439-93-2 |

RN 782495-52-7 HCAPLUS

CN Lithium nickel oxide phosphate (Li_{2.8}Ni_{0.200.1}(PO₄)) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|---------------------------|
| O | 0.1 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| Ni | 0.2 | 7440-02-0 |
| Li | 2.8 | 7439-93-2 |

RN 782495-54-9 HCAPLUS

CN Lithium zirconium oxide phosphate (Li_{2.8}Zr_{0.200.3}(PO₄)) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|---------------------------|
| O | 0.3 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| Zr | 0.2 | 7440-67-7 |
| Li | 2.8 | 7439-93-2 |

RN 782495-60-7 HCAPLUS

CN Lithium titanium oxide phosphate (Li₄Ti_{0.250}(PO₄)) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|---------------------------|
| O | 1 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| Ti | 0.25 | 7440-32-6 |
| Li | 4 | 7439-93-2 |

RN 782495-63-0 HCAPLUS

CN Lithium manganese oxide phosphate (Li_{3.25}Mn_{0.250}(PO₄)) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|---------------------------|
| O | 1 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| Mn | 0.25 | 7439-96-5 |
| Li | 3.25 | 7439-93-2 |

RN 882681-95-0 HCAPLUS

CN INDEX NAME NOT YET ASSIGNED

| Component | Ratio | Component Registry Number |
|-----------|-------|---------------------------|
| O | 0.3 | 17778-80-2 |

| | | |
|-----|-----|------------|
| O4P | 1 | 14265-44-2 |
| Ti | 0.2 | 7440-32-6 |
| Li | 2.8 | 7439-93-2 |

RN 882682-14-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| O | 2 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| V | 0.25 | 7440-62-2 |
| Li | 3.75 | 7439-93-2 |

RN 882682-16-8 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| O | 2 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| Cr | 0.25 | 7440-47-3 |
| Li | 3.5 | 7439-93-2 |

RN 882682-19-1 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| O | 1 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| Zr | 0.25 | 7440-67-7 |
| Li | 4 | 7439-93-2 |

RN 882682-44-2 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| N | 0.3 | 17778-88-0 |
| O | 3.45 | 17778-80-2 |
| S | 0.5 | 7704-34-9 |
| Si | 0.5 | 7440-21-3 |
| Li | 2.8 | 7439-93-2 |

RN 882682-54-4 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| N | 0.3 | 17778-88-0 |
| O | 2.45 | 17778-80-2 |
| S | 0.5 | 7704-34-9 |
| B | 0.5 | 7440-42-8 |
| Li | 1.3 | 7439-93-2 |

L44 ANSWER 2 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:1132715 HCAPLUS

DN 143:389852

TI **Surface treatment** for metal-polymer laminated
electrochemical cell package

IN Welker, Edward Earl; Yarber, Franklin E.

PA USA

SO U.S. Pat. Appl. Publ., 9 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---|------|----------|-----------------|----------|
| PI | US 2005233211 | A1 | 20051020 | US 2004-827539 | 20040419 |
| | WO 2005101544 | A2 | 20051027 | WO 2005-US13010 | 20050419 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| | RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |

PRAI US 2004-827539 A 20040419

AB A method for preparing a metal-polymer laminate packaging material, a method
for preparing a metal-polymer laminated electrochem. cell package, and an
electrochem. cell package, wherein adhesion of the polymer to the metal
sheet used in the packaging material and/or hydrophobicity of the metal
sheet are improved. In accordance with the invention, the metal sheet is
subjected to a **surface treatment** and thereafter coated
with a polymer to form a metal-polymer laminate packaging material.
Exemplary **surface treatments** include chromate or
phosphate conversion coatings, anodization, or chemical cleaning the metal
sheet with a caustic solution and/or an acidic solution

IC ICM H01M002-02

ICS B05D005-12; B05D003-00

INCL 429176000; 427327000; 427058000

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy
Technology)

Section cross-reference(s): 39, 56, 76

ST **surface treatment** metal polymer laminated electrochem
cell packaging material; cleaning etching chromating phosphating
electroless coating anodization **battery** covering

IT Carbonates, uses

Silicates, uses

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical,
engineering or chemical process); PROC (Process); USES (Uses)
(caustic rinse; **surface treatment** for metal-polymer
laminated electrochem. cell package)

IT Cleaning

(chemical; **surface treatment** for metal-polymer
laminated electrochem. cell package)

IT Oxides (inorganic), uses

RL: DEV (Device component use); FMU (Formation, unclassified); TEM (Technical or engineered material use); FORM (Formation, nonpreparative); USES (Uses)
(coating made by anodizing electrolyte solution; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Coating process
(conversion; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Coating process
(electroless; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Fluorides, uses
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(in chromate coating process; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Chromates
Phosphates, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(in coatings; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Secondary batteries
(**lithium**, packaging material for; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Deoxidation
(of metal with acids; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Adhesion, physical
(of polymer to metal sheet; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Adhesives
Anodization
Chromating
Coating process
Electronic packaging materials
Etching
Hydrophobicity
Laminated materials
Lamination
Surface treatment
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT Acids, uses
Bases, uses
RL: CPS (Chemical process); DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT Metals, uses
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT Plastic films

(thermo-, heat-sealable layer; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Cleaning
(to remove oil, grease, etc.; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT 7664-38-2, Phosphoric acid, uses
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(cleaning and phosphating process; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(film, foil, sheet; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT 18540-29-9P, Chromium(6+) ion, uses
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(in coating; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT 10022-31-8P, Barium nitrate
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT 1310-73-2, Sodium hydroxide, uses
RL: CPS (Chemical process); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT 526-95-4, D-Gluconic acid 7664-93-9, Sulfuric acid, uses
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

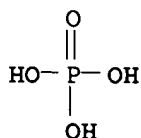
IT 7779-90-0, Zinc phosphate 10124-54-6, Manganese phosphate 10402-24-1, Iron phosphate
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT 25155-30-0, Sodium dodecylbenzenesulfonate
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT 10124-54-6, Manganese phosphate 10402-24-1, Iron phosphate
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

RN 10124-54-6 HCAPLUS

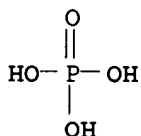
CN Phosphoric acid, manganese salt (8CI, 9CI) (CA INDEX NAME)



●x Mn(x)

RN 10402-24-1 HCAPLUS

CN Phosphoric acid, iron salt (8CI, 9CI) (CA INDEX NAME)



●x Fe(x)

L44 ANSWER 3 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:1105810 HCAPLUS

DN 143:389778

TI Composite sheet body for fuel cell and secondary battery and its manufacture

IN Takashima, Masayuki; Yonezawa, Susumu; Kiyokawa, Hajime; Shinke, Hidemasa

PA Kyokawa Mekki Kogyo K. K., Japan; Seiren Co., Ltd.

SO Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---------------|------|----------|-----------------|----------|
| PI | JP 2005280164 | A2 | 20051013 | JP 2004-98885 | 20040330 |
| PRAI | JP 2004-98885 | | 20040330 | | |

AB The title body has a porous sheet substrate, a H-absorbing alloy fine powder layer laminatedly bonded on the substrate, and a porous metal plated layer covering whole H-absorbing alloy fine powder layer bonded substrate; and is manufactured by laminatedly bonding a H-absorbing alloy fine powder on the porous sheet substrate; forming a metal plated layer covering the whole H-absorbing alloy fine powder layer bonded substrate; and porous forming the metal plated layer.

IC ICM B32B015-04

ICS C23C018-31; C23C018-52; C25D015-02; D06M011-83; D06M023-08;

H01M004-24; H01M004-26; H01M008-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

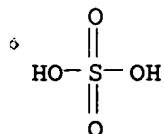
ST fuel cell hydrogen secondary battery hydrogen absorbing alloy sheet; battery electrode hydrogen absorbing alloy metal plated

layer coating
IT **Battery electrodes**
Fuel cells
Secondary batteries
on (manufacture of composite sheets containing H-absorbing alloy powder layer
substrate with metal plated layer coating for fuel cells and secondary
batteries)
IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
on (manufacture of composite sheets containing H-absorbing alloy powder layer
substrate with metal plated layer coating for fuel cells and secondary
batteries)
IT Polyester fibers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
on (manufacture of composite sheets containing H-absorbing alloy powder layer
substrate with metal plated layer coating for fuel cells and secondary
batteries)
IT 56-40-6, Glycine, uses 471-34-1, Calcium carbonate, uses 1310-73-2,
Sodium hydroxide, uses 7440-50-8, Copper, uses 7681-53-0,
Sodium hypophosphite 7786-81-4, Nickel sulfate 7791-20-0,
Nickel chloride hexahydrate 9002-84-0, PTFE 10043-35-3, Boric acid,
uses 13770-89-3
RL: MOA (Modifier or additive use); USES (Uses)
on (manufacture of composite sheets containing H-absorbing alloy powder layer
substrate with metal plated layer coating for fuel cells and secondary
batteries)
IT 181147-99-9
RL: TEM (Technical or engineered material use); USES (Uses)
on (manufacture of composite sheets containing H-absorbing alloy powder layer
substrate with metal plated layer coating for fuel cells and secondary
batteries)
IT 7681-53-0, Sodium hypophosphite 7786-81-4, Nickel
sulfate 13770-89-3
RL: MOA (Modifier or additive use); USES (Uses)
on (manufacture of composite sheets containing H-absorbing alloy powder layer
substrate with metal plated layer coating for fuel cells and secondary
batteries)
RN 7681-53-0 HCAPLUS
CN Phosphinic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

O=PH₂-OH

● Na

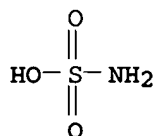
RN 7786-81-4 HCAPLUS
CN Sulfuric acid, nickel(2+) salt (1:1) (8CI, 9CI) (CA INDEX NAME)



● Ni(II)

RN 13770-89-3 HCAPLUS

CN Sulfamic acid, nickel(2+) salt (2:1) (8CI, 9CI) (CA INDEX NAME)



● 1/2 Ni(II)

L44 ANSWER 4 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:1006742 HCAPLUS

DN 143:443411

TI Improvement of high-voltage cycling behavior of surface-modified
Li[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂ cathodes by fluorine substitution for
Li-ion batteries

AU Kim, G.-H.; Kim, J.-H.; Myung, S.-T.; Yoon, C. S.; Sun, Y.-K.

CS Department of Chemical Engineering, Center for Information and
 Communication Materials, Hanyang University, Seoul, 133-791, S. Korea

SO Journal of the Electrochemical Society (2005), 152(9), A1707-A1713

CODEN: JESOAN; ISSN: 0013-4651

PB Electrochemical Society

DT Journal

LA English

AB To improve the electrochem. properties of **Li[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂**
 at the high upper voltage limit of 4.6 V, O was partly substituted by F.
 Variation of lattice parameters and XPS anal. suggest that F substituted
 in the bulk material and is coated on the surface of **Li**
[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂. **Li[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂-zFz** (z = 0.05 and
 0.1) showed stable cycling performance and improvement of high rate
 capability compared to untreated **Li[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂**. F
 substitution catalyzes the growth of the primary particles, which in turn
 resulted in high tap d. as well as high volumetric capacity compared to
Li[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂. DSC at 4.6 V clearly shows that F
 substitution markedly improves the thermal stability of **Li**
[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂-zFz.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)

ST cobalt lithium manganese nickel oxide cathode fluorination
lithium battery

IT **Battery** cathodes
 Fluorination

(improvement of high-voltage cycling characteristics of Li
[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂ cathodes for Li-ion batteries
by fluorination)

IT **Surface treatment**
(improvement of high-voltage cycling characteristics of Li
[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂ cathodes for Li-ion batteries
by surface fluorination)

IT **Secondary batteries**
(lithium; improvement of high-voltage cycling characteristics
of Li[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂ cathodes for Li-ion
batteries by fluorination)

IT 346417-97-8, Cobalt lithium manganese nickel oxide
(Co_{0.33}LiMn_{0.33}Ni_{0.33}O₂) 796966-08-0 796966-09-1
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(improvement of high-voltage cycling characteristics of Li
[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂ cathodes for Li-ion batteries
by fluorination)

IT 796966-10-4 796966-11-5 796966-12-6
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(improvement of high-voltage cycling characteristics of Li
[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂ cathodes for Li-ion batteries
by fluorination)

IT 796966-08-0 796966-09-1
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(improvement of high-voltage cycling characteristics of Li
[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂ cathodes for Li-ion batteries
by fluorination)

RN 796966-08-0 HCAPLUS

CN Cobalt lithium manganese nickel fluoride oxide
(Co_{0.33}LiMn_{0.33}Ni_{0.33}F_{0.05}O_{1.95}) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 1.95 | 17778-80-2 |
| F | 0.05 | 14762-94-8 |
| Co | 0.33 | 7440-48-4 |
| Ni | 0.33 | 7440-02-0 |
| Mn | 0.33 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

RN 796966-09-1 HCAPLUS

CN Cobalt lithium manganese nickel fluoride oxide
(Co_{0.33}LiMn_{0.33}Ni_{0.33}F_{0.10}O_{1.9}) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 1.9 | 17778-80-2 |
| F | 0.1 | 14762-94-8 |
| Co | 0.33 | 7440-48-4 |
| Ni | 0.33 | 7440-02-0 |
| Mn | 0.33 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

IT 796966-10-4 796966-11-5 796966-12-6
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(improvement of high-voltage cycling characteristics of Li

[Ni_{1/3}Co_{1/3}Mn_{1/3}]O₂ cathodes for Li-ion batteries
by fluorination)

RN 796966-10-4 HCAPLUS

CN Cobalt lithium manganese nickel fluoride oxide
(Co_{0.33}LiMn_{0.33}Ni_{0.33}F_{0.15}O_{1.85}) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 1.85 | 17778-80-2 |
| F | 0.15 | 14762-94-8 |
| Co | 0.33 | 7440-48-4 |
| Ni | 0.33 | 7440-02-0 |
| Mn | 0.33 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

RN 796966-11-5 HCAPLUS

CN Cobalt lithium manganese nickel fluoride oxide
(Co_{0.33}LiMn_{0.33}Ni_{0.33}F_{0.20}O_{1.8}) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 1.8 | 17778-80-2 |
| F | 0.2 | 14762-94-8 |
| Co | 0.33 | 7440-48-4 |
| Ni | 0.33 | 7440-02-0 |
| Mn | 0.33 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

RN 796966-12-6 HCAPLUS

CN Cobalt lithium manganese nickel fluoride oxide
(Co_{0.33}LiMn_{0.33}Ni_{0.33}F_{0.50}O_{1.5}) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 1.5 | 17778-80-2 |
| F | 0.5 | 14762-94-8 |
| Co | 0.33 | 7440-48-4 |
| Ni | 0.33 | 7440-02-0 |
| Mn | 0.33 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

RE.CNT 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 5 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:667369 HCAPLUS

DN 143:389692

TI Porous, carbon-decorated LiFePO₄ prepared by sol-gel method based on
citric acidAU Gaberscek, Miran; Dominko, Robert; Bele, Marjan; Remskar, Maja; Hanzel,
Darko; Jamnik, Janko

CS National Institute of Chemistry, Ljubljana, SI-1001, Slovenia

SO Solid State Ionics (2005), 176(19-22), 1801-1805

CODEN: SSIOD3; ISSN: 0167-2738

PB Elsevier B.V.

DT Journal

LA English

AB LiFePO₄-C composite cathode material for lithium **batteries** was prepared. The active component consists of micrometer-sized particles having pores with a large size distribution. When filled with electrolyte, the pores are responsible for supply of ions while the distance between the pores (30-150 nm) det. the solid-state diffusion kinetics. The walls of pores are **covered** with a C layer which serves as an electron conductor and is thin enough (2-3 nm) to allow penetration of Li ions. The synthesis is sol-gel based with a single heating step. The electrochem. performance is the best known for LiFePO₄ cathodes.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST porous iron lithium phosphate carbon composite cathode lithium **battery**

IT **Secondary batteries**
(lithium; porous carbon-LiFePO₄ composite cathode material for lithium **batteries**)

IT **Battery cathodes**
Porous materials
(porous carbon-LiFePO₄ composite cathode material for lithium **batteries**)

IT Sol-gel processing
(porous carbon-LiFePO₄ composite cathode material prepared by sol-gel processing based on citric acid)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(porous carbon-LiFePO₄ composite cathode material for lithium **batteries**)

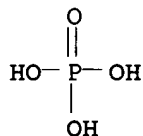
IT 15365-14-7P, Iron lithium phosphate (FeLiPO₄)
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(porous carbon-LiFePO₄ composite cathode material for lithium **batteries**)

IT 77-92-9, Citric acid, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(porous carbon-LiFePO₄ composite cathode material prepared by sol-gel processing based on citric acid)

IT 15365-14-7P, Iron lithium phosphate (FeLiPO₄)
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(porous carbon-LiFePO₄ composite cathode material for lithium **batteries**)

RN 15365-14-7 HCAPLUS

CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (9CI) (CA INDEX NAME)



● Fe(II)

● Li

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 6 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:474801 HCAPLUS

DN 143:10617

TI Method for preparing cathode active material for rechargeable
lithium battery

IN Park, Yong-Chul; Kim, Geun-Bae; Suh, JunWon; Jung, Won-Il

PA S. Korea

SO U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---------------|------|----------|------------------|----------|
| PI | US 2005118511 | A1 | 20050602 | US 2004-996724 | 20041122 |
| | JP 2005166656 | A2 | 20050623 | JP 2004-335157 | 20041118 |
| | CN 1622367 | A | 20050601 | CN 2004-10097414 | 20041129 |
| PRAI | KR 2003-86080 | A | 20031129 | | |

AB Disclosed is a method of preparing a pos. active material for a rechargeable
lithium battery including adding first and second
comps. to a solvent to prepare an acidic solution with a pH from 0.01 to 3,
the first compound including an element that is capable of forming a double
bond with an oxygen of a **lithium** metal oxide, and the second
compound including at least one element selected from the group consisting
of alkali metals, alkali earth metals, group 13 elements, group 14
elements, transition metals and rare-earth elements; adding a
lithium-containing compound to the acidic coating solution to coat the
lithium-containing compound; and heat-treating the coated
lithium-containing compound to form a **surface-**
treatment layer comprising a compound represented by the
formula MXO_k where M is an element selected from the group consisting of
alkali metals, alkali earth metals, group 13 elements, group 14 elements,
transition metals, rare-earth elements and combinations thereof; X is an
element that is capable of forming a double bond with oxygen; and k is an
integer from 2 to 4.

IC ICM H01M004-52

ICS H01M004-50

INCL 429324000; 429231100; 429223000; 429231300; 429224000; 429221000;
429231600; 429231500; 429231200

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy
Technology)

ST **lithium battery** cathode active material prepn

IT Secondary **batteries**

(**lithium**; method for preparing cathode active material for
rechargeable **lithium battery**)

IT **Battery** cathodes

Coating materials

(method for preparing cathode active material for rechargeable
lithium battery)

IT Alkali metal compounds

Alkaline earth compounds

Group IIIA element compounds

Group IVA element compounds

Rare earth compounds

Transition metal compounds

RL: DEV (Device component use); USES (Uses)

(method for preparing cathode active material for rechargeable
lithium battery)

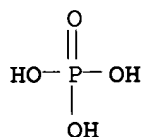
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(method for preparing cathode active material for rechargeable
lithium battery)

IT 7429-90-5, Aluminum, uses 7783-28-0, Diammonium hydrogen phosphate
7784-27-2, Aluminum nitrate nonahydrate 12190-79-3, Cobalt
lithium oxide (CoLiO₂) 619322-75-7, Cobalt lithium
manganese nickel oxide (Co_{0.1}Li_{1.03}Mn_{0.1}Ni_{0.8}O₂)
RL: DEV (Device component use); USES (Uses)
(method for preparing cathode active material for rechargeable
lithium battery)

IT 7440-44-0, Carbon, uses 7784-30-7, Aluminum phosphate alpo₄
24937-79-9, PvdF
RL: TEM (Technical or engineered material use); USES (Uses)
(method for preparing cathode active material for rechargeable
lithium battery)

IT 7784-30-7, Aluminum phosphate alpo₄
RL: TEM (Technical or engineered material use); USES (Uses)
(method for preparing cathode active material for rechargeable
lithium battery)

RN 7784-30-7 HCAPLUS
CN Phosphoric acid, aluminum salt (1:1) (8CI, 9CI) (CA INDEX NAME)



● Al

L44 ANSWER 7 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:1126870 HCAPLUS
DN 142:59755
TI Method for the synthesis of surface-modified materials
IN Besenhard, Jurgen Otto; Wachtler, Mario; Han, Joong-hee; Basch, Angelika
PA Austria
SO U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| | ----- | --- | ----- | ----- | ----- |
| PI | US 2004258836 | A1 | 20041223 | US 2003-602251 | 20030623 |
| PRAI | US 2003-602251 | | 20030623 | | |

AB Disclosed is a method for producing surface-modified materials, such as
core-shell materials with the core and the shell(s) being different
distinct phases, or materials with a concentration gradient of one or more
dopant

or substituent element(s) from the surface to the bulk. The method
comprises (i) treating the bulk of material with a solution containing a first
solvent and at least one flocculant comprising a soluble polymer so that the

flocculant adheres to the bulk; (ii) subsequently contacting the flocculant-treated bulk of step (i) with a dispersion containing a second solvent and the particulate solid particles to deposit the particulate solid particles on the flocculant-treated bulk; and (iii) subsequently treating the resultant of step (ii) with heat. This method can in particular be applied to produce surface-modified cathode materials for **Li batteries** with improved performance.

IC ICM B05D003-02

INCL 427180000; 427213000

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 76

ST **battery** cathode surface modified material synthesis; fuel cell electrode surface modified material synthesis; capacitor electrode surface modified material synthesis

IT Phosphates, uses

Phosphites

Sulfates, uses

RL: MOA (Modifier or additive use); USES (Uses)

(hydrogen; method for synthesis of surface-modified materials)

IT **Battery** cathodes

Capacitor electrodes

Flocculants

Fuel cell electrodes

Heat treatment

Polyelectrolytes

Surface treatment

(method for synthesis of surface-modified materials)

IT Betaines

Bicarbonates

Bisulfites

Hydroxides (inorganic)

Oxides (inorganic), uses

Polysaccharides, uses

RL: MOA (Modifier or additive use); USES (Uses)

(method for synthesis of surface-modified materials)

IT Solvents

(nonaq., polar; method for synthesis of surface-modified materials)

IT Alcohols, uses

Esters, uses

Ethers, uses

Ketones, uses

Lactams

Sulfoxides

RL: TEM (Technical or engineered material use); USES (Uses)

(solvent; method for synthesis of surface-modified materials)

IT Proteins

RL: MOA (Modifier or additive use); USES (Uses)

(water-soluble; method for synthesis of surface-modified materials)

IT 409-21-2, Silicon carbide (SiC), uses

RL: TEM (Technical or engineered material use); USES (Uses)

(coating; method for synthesis of surface-modified materials)

IT 1308-06-1, Cobalt oxide (Co3O4) 12057-17-9, **Lithium** manganese

oxide (LiMn2O4) 15365-14-7, Iron **lithium** phosphate

felipo4 131344-56-4, Cobalt **lithium** nickel oxide

135573-53-4, Cobalt **lithium** nickel oxide CoO-1LiNiO-102

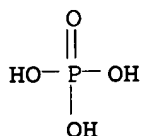
RL: DEV (Device component use); USES (Uses)

(method for synthesis of surface-modified materials)

IT 554-13-2, **Lithium** carbonate 1305-78-8, Calcia Cao, uses

1309-48-4, Magnesium oxide (MgO), uses 1312-43-2, Indium oxide (In2O3)

1312-81-8, Lanthanum oxide (La2O3) 1314-11-0, Strontium oxide (SrO),
 uses 1314-13-2, Zinc oxide (ZnO), uses 1314-23-4, Zirconia, uses
 1314-36-9, Yttrium oxide (Y2O3), uses 1344-28-1, Alumina, uses
 7727-43-7, Barium sulfate baso4 12003-67-7, Aluminum lithium
 oxide allio2 12031-65-1, Lithium nickel oxide (LiNiO2)
 12031-82-2, Lithium titanium oxide (Li2TiO3) 12047-27-7,
 Barium titanium oxide (BaTiO3), uses 12049-50-2, Calcium titanium oxide
 (CaTiO3) 12057-24-8, Lithium oxide (Li2O), uses 12190-79-3,
 Cobalt lithium oxide (CoLiO2) 13463-67-7, Titania, uses
 18282-10-5, Tin dioxide
 RL: MOA (Modifier or additive use); USES (Uses)
 (method for synthesis of surface-modified materials)
 IT 7732-18-5, Water, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (solvent; method for synthesis of surface-modified materials)
 IT 15365-14-7, Iron lithium phosphate felipo4
 RL: DEV (Device component use); USES (Uses)
 (method for synthesis of surface-modified materials)
 RN 15365-14-7 HCAPLUS
 CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (9CI) (CA INDEX NAME)



● Fe(II)

● Li

L44 ANSWER 8 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:1081208 HCAPLUS

DN 142:41556

TI Aliovalent anion protective layers for active metal anodes

IN De Jonghe, Lutgard; Nimon, Yevgeniy S.; Visco, Steven J.

PA Polyplus Battery Company, USA

SO PCT Int. Appl., 37 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-----|--|------|----------|-----------------|----------|
| PI | WO 2004109823 | A1 | 20041216 | WO 2004-US17646 | 20040604 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| RW: | BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, | | | | |

AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
 EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,
 SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
 SN, TD, TG

US 2004253510 A1 20041216 US 2004-861336 20040603
 EP 1629552 A1 20060301 EP 2004-776270 20040604

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

PRAI US 2003-476143P P 20030604
 US 2003-482997P P 20030627
 US 2004-861336 A 20040603
 WO 2004-US17646 W 20040604

AB Active metal anodes can be protected from deleterious reaction and voltage delay in an active metal anode-solid cathode **battery** cell, and damage to the anode can be significantly reduced or completely alleviated by coating the active metal anode (e.g., Li) surface with a thin layer of a chemical protective layer incorporating aliovalent (multivalent) anions on the **lithium** metal surface. Such an aliovalent surface layer is conductive to Li-ions but can protect **lithium** metal from reacting with oxygen, nitrogen or moisture in ambient atmospheric thereby allowing the **lithium** material to be handled outside of a controlled atmospheric, such as a dry room. Particularly, preferred examples

of

such protective layers include mixts. or solid solns. of **lithium** phosphate, **lithium** metaphosphate, and/or **lithium** sulfate. These protective layers can be formed on the Li surface by treatment with diluted solns. of the following acids: H3PO4, HPO3 and H2SO4 or their acidic salts in a dry organic solvent compatible with Li by various techniques. Such chemical protection of the Li or other active metal electrode significantly enhances active metal electrode protection and reduces the voltage delay due to protected anode's improved stability toward the electrolyte.

IC ICM H01M004-04

ICS H01M004-02; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST **battery** anode aliovalent anion protective layer coating

IT Phosphates, uses

Sulfates, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(active metal; aliovalent anion protective layers for active metal anodes)

IT **Battery** anodes

Coating materials

(aliovalent anion protective layers for active metal anodes)

IT Alkali metals, uses

Alkaline earth metals

Oxides (inorganic), uses

Sulfides, uses

RL: DEV (Device component use); USES (Uses)

(aliovalent anion protective layers for active metal anodes)

IT Alloys, uses

RL: DEV (Device component use); USES (Uses)

(alkaline earth; aliovalent anion protective layers for active metal anodes)

IT Alloys, uses

RL: DEV (Device component use); USES (Uses)

(alkali metal; aliovalent anion protective layers for active metal anodes)

IT Alkali metals, uses

Alkaline earth metals
RL: DEV (Device component use); USES (Uses)
(alloys; aliovalent anion protective layers for active metal anodes)

IT Primary batteries
Secondary batteries
(lithium; aliovalent anion protective layers for active metal anodes)

IT Phosphates, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(metaphosphates, active metal; aliovalent anion protective layers for active metal anodes)

IT Halides
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(oxyhalides, liquid; aliovalent anion protective layers for active metal anodes)

IT 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 1313-13-9, Manganese dioxide, uses 1313-27-5, Molybdenum oxide (MoO3), uses 1317-37-9, Iron sulfide (FeS) 1317-38-0, Copper oxide (CuO), uses 1317-40-4, Copper sulfide (CuS) 7439-93-2, Lithium, uses 7439-95-4, Magnesium, uses 7440-09-7, Potassium, uses 7440-23-5, Sodium, uses 7440-39-3, Barium, uses 7440-41-7, Beryllium, uses 7440-70-2, Calcium, uses 7704-34-9, Sulfur, uses 7719-09-7, Thionyl chloride 7784-01-2, Silver chromate 7791-03-9, Lithium perchlorate 11105-02-5, Silver vanadium oxide 12039-13-3, Titanium sulfide (TiS2) 12068-85-8, Iron sulfide (FeS2) 14283-07-9, Lithium tetrafluoroborate 15365-14-7, Iron lithium phosphate felipo4 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 39300-70-4, Lithium nickel oxide 39457-42-6, Lithium manganese oxide 52627-24-4, Cobalt lithium oxide 74432-42-1, Lithium polysulfide 90076-65-6, Litfsi
RL: DEV (Device component use); USES (Uses)
(aliovalent anion protective layers for active metal anodes)

IT 7664-93-9, Sulfuric acid, uses 13453-86-6, Lithium hydrogen sulfate
RL: MOA (Modifier or additive use); USES (Uses)
(aliovalent anion protective layers for active metal anodes)

IT 7664-38-2, Phosphoric acid, uses 10343-62-1, MetaPhosphoric acid 14066-19-4, Hydrogen phosphate, uses 14066-20-7, Dihydrogen phosphate, uses
RL: MOA (Modifier or additive use); USES (Uses)
(film forming additive; aliovalent anion protective layers for active metal anodes)

IT 10377-48-7, Lithium sulfate 10377-52-3, Lithium phosphate
RL: TEM (Technical or engineered material use); USES (Uses)
(protective layer; aliovalent anion protective layers for active metal anodes)

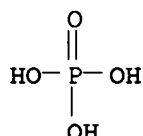
IT 7439-93-2, Lithium, uses 15365-14-7, Iron lithium phosphate felipo4
RL: DEV (Device component use); USES (Uses)
(aliovalent anion protective layers for active metal anodes)

RN 7439-93-2 HCAPLUS
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 15365-14-7 HCAPLUS

CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (9CI) (CA INDEX NAME)



● Fe(II)

● Li

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 9 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:999659 HCAPLUS

DN 141:413676

TI Method for **surface treatment of lithium**manganese oxide for cathode in **lithium secondary battery**

IN Lee, Jai Young; Park, Sung Chul; Han, Young Soo; Kang, Youn Seon; Kang, Yong Mook; Han, Sang Cheol

PA S. Korea

SO U.S. Pat. Appl. Publ., 11 pp., Cont.-in-part of U.S. Ser. No. 731,017.
CODEN: USXXCO

DT Patent

LA English

FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| | ----- | ---- | ----- | ----- | ----- |
| PI | US 2004228965 | A1 | 20041118 | US 2004-868881 | 20040617 |
| | US 2001031311 | A1 | 20011018 | US 2000-731017 | 20001207 |
| PRAI | US 2000-731017 | B2 | 20001207 | | |
| | KR 2000-20158 | A | 20000417 | | |

AB A method for **surface treatment of lithium**manganese oxide for pos. electrodes in **lithium secondary****batteries** is provided in which the surface of the **lithium**manganese oxide is coated with **lithium** transition metal oxides.The **lithium secondary batteries** using the coated**lithium** manganese oxide as an anode material not only solves theproblems with the conventional **lithium secondary****batteries** in regard to the lifetime of the electrodes at high

temperature and the fast discharge efficiency, but also replace the

conventional

expensive **lithium** cobalt oxide to reduce the production cost.

IC ICM B05D005-12

ICS H01M004-50

INCL 427126300; 429231100; 429224000

CC 52-2 (**Electrochemical, Radiational, and Thermal Energy**
Technology)ST **surface treatment lithium** manganese oxide
cathode secondary **battery**

IT Transition metal oxides
RL: TEM (Technical or engineered material use); USES (Uses)
(lithium-containing, coating; method for surface treatment of lithium manganese oxide for cathode in lithium secondary battery)

IT Secondary batteries
(lithium; method for surface treatment of lithium manganese oxide for cathode in lithium secondary battery)

IT Battery cathodes
Coating materials
Surface treatment
(method for surface treatment of lithium manganese oxide for cathode in lithium secondary battery)

IT 12031-65-1, Lithium nickel oxide (LiNiO₂) 12190-79-3, Cobalt lithium oxide (CoLiO₂) 120062-99-9, Cobalt copper lithium nickel oxide 135573-53-4, Cobalt lithium nickel oxide co0-11ini0-1o2 182442-94-0, Cobalt lithium nickel vanadium oxide 182442-95-1, Cobalt lithium manganese nickel oxide 182442-96-2, Cobalt iron lithium nickel oxide 204451-09-2, Chromium lithium manganese oxide (CrO-0.5LiMn1.5-2O₄) 244304-20-9, Cobalt lithium nickel titanium oxide 244304-21-0, Chromium cobalt lithium nickel oxide 244304-25-4, Cobalt lithium molybdenum nickel oxide 252568-41-5, Cobalt lithium nickel tungsten oxide 252568-42-6, Cobalt lithium nickel tantalum oxide 637003-44-2, Copper lithium manganese oxide (CuO-0.5LiMn1.5-2O₄) 792913-31-6, Iron lithium manganese oxide (FeO-0.5LiMn1.5-2O₄) 792913-32-7, Lithium manganese vanadium oxide (LiMn1.5-2V0-0.5O₄) 792913-34-9, Lithium manganese titanium oxide (LiMn1.5-2Ti0-0.5O₄) 792913-35-0, Lithium manganese tungsten oxide (LiMn1.5-2W0-0.5O₄) 792913-36-1, Lithium manganese tantalum oxide (LiMn1.5-2Ta0-0.5O₄) 792913-37-2, Lithium manganese molybdenum oxide (LiMn1.5-2Mo0-0.5O₄)
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; method for surface treatment of lithium manganese oxide for cathode in lithium secondary battery)

IT 71-48-7, Cobalt acetate 373-02-4, Nickel acetate 546-89-4, Lithium acetate 1834-30-6, Ferric acetate 2180-18-9, Manganese acetate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(method for surface treatment of lithium manganese oxide for cathode in lithium secondary battery)

IT 12057-17-9, Lithium manganese oxide (LiMn₂O₄)
RL: DEV (Device component use); USES (Uses)
(method for surface treatment of lithium manganese oxide for cathode in lithium secondary battery)

IT 39457-42-6, Lithium manganese oxide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(method for surface treatment of lithium manganese oxide for cathode in lithium secondary battery)

IT 252568-41-5, Cobalt lithium nickel tungsten oxide

792913-35-0, Lithium manganese tungsten oxide
(LiMn_{1.5}-2W₀-0.5O₄)

RL: TEM (Technical or engineered material use); USES (Uses)
(coating; method for surface treatment of
lithium manganese oxide for cathode in lithium
secondary battery)

RN 252568-41-5 HCAPLUS

CN Cobalt lithium nickel tungsten oxide (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | x | 17778-80-2 |
| Co | x | 7440-48-4 |
| W | x | 7440-33-7 |
| Ni | x | 7440-02-0 |
| Li | x | 7439-93-2 |

RN 792913-35-0 HCAPLUS

CN Lithium manganese tungsten oxide (LiMn_{1.5}-2W₀-0.5O₄) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|---------|------------------------------|
| ===== | ===== | ===== |
| O | 4 | 17778-80-2 |
| W | 0 - 0.5 | 7440-33-7 |
| Mn | 1.5 - 2 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

L44 ANSWER 10 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:874818 HCAPLUS

DN 142:286929

TI Influence of potential of phosphate treatment of aluminum matrix on
cycling of the Al³⁺-La-electrode in the aprotic organic solution

AU Apalikova, L. E.; Klyuev, V. V.; Popova, S. S.

CS Tekhnol. Inst., Sarat. Gos. Tekh. Univ., Saratov, Russia

SO Izvestiya Vysshikh Uchebnykh Zavedenii, Khimiya i Khimicheskaya
Tekhnologiya (2004), 47(4), 111-114
CODEN: IVUKAR; ISSN: 0579-2991

PB Ivanovskii Gosudarstvennyi Khimiko-Tekhnologicheskii Universitet

DT Journal

LA Russian

AB It was shown that the presence of phosphate layer on the surface of
aluminum electrode does not prevent the processes of cathodic
incorporation followed by anodic dissoln. of lanthanum and lithium
. Duration of charge-discharge cycle and cycling of electrodes by
lithium depends on preliminary phosphate treatment. Assumption is
made that it is associated with the change in the structure of phosphate
layer.

CC 72-7 (Electrochemistry)

Section cross-reference(s): 52, 56

ST phosphate treatment aluminum matrix lanthanum electrodeposition
lithium battery

IT Electrodeposits

(anodic; formation by anodization of aluminum in solution containing Na₃PO₄)

IT Electric potential

Surface treatment

(influence of potential of phosphate treatment of aluminum matrix on

cycling of Alph-La-electrode in aprotic organic solution)

IT Secondary batteries
(lithium; influence of potential of phosphate treatment of aluminum matrix on cycling of Alph-La-electrode in aprotic organic solution in relation to)

IT Electrodeposition
(of La in anodic phosphate film on aluminum, in propylene carbonate/DMF containing LiClO₄)

IT Open circuit potential
(of aluminum after polarization in solution containing Na₃PO₄ and after cathodic introducing of La in anodic phosphate film)

IT Anodic polarization
Anodization
(of aluminum in solution containing Na₃PO₄)

IT Solvents
(organic, aprotic; influence of potential of phosphate treatment of aluminum matrix on cycling of Alph-La-electrode in aprotic organic solution)

IT Coating process
(phosphating; influence of potential of phosphate treatment of aluminum matrix on cycling of Alph-La-electrode in aprotic organic solution)

IT 7601-54-9, Trisodium phosphate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(anodization of aluminum in solution containing Na₃PO₄)

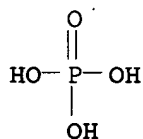
IT 68-12-2, DMF, uses 108-32-7, Propylene carbonate
RL: NUU (Other use, unclassified); USES (Uses)
(electrodeposition of La in anodic phosphate film on aluminum, in propylene carbonate/DMF containing LiClO₄)

IT 10099-58-8, Lanthanum trichloride
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(electrodeposition of La in anodic phosphate film on aluminum, in propylene carbonate/DMF containing LiClO₄ in presence of)

IT 7601-54-9, Trisodium phosphate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(anodization of aluminum in solution containing Na₃PO₄)

RN 7601-54-9 HCAPLUS

CN Phosphoric acid, trisodium salt (8CI, 9CI) (CA INDEX NAME)



●3 Na

L44 ANSWER 11 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:650267 HCAPLUS

DN 141:193000

TI Positive electrode material for secondary battery, process for producing the same and secondary battery

IN Hatta, Naoki; Inaba, Toshikazu; Uchiyama, Izumi

PA Mitsui Engineering & Shipbuilding Co., Ltd., Japan; Research Institute of

Innovative Technology for the Earth

SO PCT Int. Appl., 74 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | WO 2004068620 | A1 | 20040812 | WO 2004-JP919 | 20040130 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI | | | | |
| | CA 2514528 | AA | 20040812 | CA 2004-2514528 | 20040130 |
| | EP 1603177 | A1 | 20051207 | EP 2004-706803 | 20040130 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK | | | | |
| PRAI | JP 2003-24454 | A | 20030131 | | |
| | WO 2004-JP919 | W | 20040130 | | |
| AB | A pos. electrode material for secondary battery comprises as a main component a pos. electrode active substance of the general formula Li_nFePO_4 (wherein n is a number of 0 to 1) and Mo. The Mo is complexed with the pos. electrode active substance Li_nFePO_4 . In a preferred form of the pos. electrode material, the pos. electrode material on its surface has deposits of conductive carbon. The method for preparation of anode active material as well as batteries prepared with the anode active materials are also disclosed. | | | | |
| IC | ICM H01M004-58 | | | | |
| | ICS H01M010-40 | | | | |
| CC | 52-2 (Electrochemical , Radiational, and Thermal Energy Technology) | | | | |
| ST | lithium iron molybdenum phosphate battery anode active material | | | | |
| IT | Battery anodes (secondary; lithium iron molybdenum phosphate type battery anode active substances for) | | | | |
| IT | 7440-44-0, Carbon, uses RL: MOA (Modifier or additive use); USES (Uses) (lithium iron molybdenum phosphate type battery anode active substance surface-treated with particles of) | | | | |
| IT | 737008-16-1P, Iron lithium molybdenum oxide phosphate ($\text{Fe}_{1.02}\text{Li}_{0.98}\text{Mo}_{0.02}\text{O}_{0.73}(\text{PO}_4)$) 737008-17-2P, Iron lithium molybdenum oxide phosphate ($\text{Fe}_{1.08}\text{Li}_{1.03}\text{Mo}_{0.01}\text{O}_{0.44}(\text{PO}_4)$) 737008-18-3P 737008-19-4P 737008-20-7P 737008-21-8P RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses) (secondary battery anode-active substance) | | | | |
| IT | 737008-16-1P, Iron lithium molybdenum oxide phosphate ($\text{Fe}_{1.02}\text{Li}_{0.98}\text{Mo}_{0.02}\text{O}_{0.73}(\text{PO}_4)$) 737008-17-2P, Iron lithium molybdenum oxide phosphate ($\text{Fe}_{1.08}\text{Li}_{1.03}\text{Mo}_{0.01}\text{O}_{0.44}(\text{PO}_4)$) 737008-18-3P 737008-19-4P 737008-20-7P 737008-21-8P RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses) (secondary battery anode-active substance) | | | | |
| RN | 737008-16-1 HCAPLUS | | | | |
| CN | Iron lithium molybdenum oxide phosphate ($\text{Fe}_{1.02}\text{Li}_{0.98}\text{Mo}_{0.02}\text{O}_{0.73}(\text{PO}_4)$) (9CI) (CA INDEX NAME) | | | | |

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.73 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| Mo | 0.02 | 7439-98-7 |
| Li | 0.98 | 7439-93-2 |
| Fe | 1.02 | 7439-89-6 |

RN 737008-17-2 HCAPLUS

CN Iron lithium molybdenum oxide phosphate (Fe1.08Li1.03Mo0.01O0.44(PO4))
(9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.44 | 17778-80-2 |
| O4P | 1 | 14265-44-2 |
| Mo | 0.01 | 7439-98-7 |
| Li | 1.03 | 7439-93-2 |
| Fe | 1.08 | 7439-89-6 |

RN 737008-18-3 HCAPLUS

CN Iron lithium molybdenum metaphosphate oxide (Fe1.01Li1.01Mo0.04(PO3)O0.94)
(9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.94 | 17778-80-2 |
| O3P | 1 | 15389-19-2 |
| Mo | 0.04 | 7439-98-7 |
| Li | 1.01 | 7439-93-2 |
| Fe | 1.01 | 7439-89-6 |

RN 737008-19-4 HCAPLUS

CN Iron lithium molybdenum metaphosphate oxide (Fe1.01Li0.95Mo0.04(PO3)O0.96)
(9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.96 | 17778-80-2 |
| O3P | 1 | 15389-19-2 |
| Mo | 0.04 | 7439-98-7 |
| Li | 0.95 | 7439-93-2 |
| Fe | 1.01 | 7439-89-6 |

RN 737008-20-7 HCAPLUS

CN Iron lithium molybdenum metaphosphate oxide (Fe0.95Li0.99Mo0.05(PO3)O0.95)
(9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 0.95 | 17778-80-2 |
| O3P | 1 | 15389-19-2 |
| Mo | 0.05 | 7439-98-7 |
| Li | 0.99 | 7439-93-2 |

| | | |
|----|------|-----------|
| Fe | 0.95 | 7439-89-6 |
|----|------|-----------|

RN 737008-21-8 HCAPLUS

CN Iron lithium molybdenum metaphosphate oxide (Fe_{1.05}Li_{1.05}Mo_{0.05}(PO₃)O_{0.96})
(9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| O | 0.96 | 17778-80-2 |
| O3P | 1 | 15389-19-2 |
| Mo | 0.05 | 7439-98-7 |
| Li | 1.05 | 7439-93-2 |
| Fe | 1.05 | 7439-89-6 |

L44 ANSWER 12 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:481781 HCAPLUS

DN 141:9733

TI Method of preparation of cathode material for **lithium secondary batteries**

IN Kweon, Ho-jin; Jung, Hyun-sook; Kim, Geun-bae; Park, Dong-gon

PA Samsung SDI Co., Ltd., S. Korea

SO U.S., 8 pp., Cont.-in-part of U.S. 6,372,385.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 3

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | US 6749965 | B1 | 20040615 | US 2000-595075 | 20000616 |
| | US 6372385 | B1 | 20020416 | US 1999-248202 | 19990210 |
| | KR 2001002784 | A | 20010115 | KR 1999-22765 | 19990617 |
| | US 2002061444 | A1 | 20020523 | US 2002-41921 | 20020107 |
| | US 6783890 | B2 | 20040831 | | |
| PRAI | US 1999-248202 | A2 | 19990210 | | |
| | KR 1999-22765 | A | 19990617 | | |
| | KR 1998-3755 | A | 19980210 | | |
| | KR 1998-12005 | A | 19980406 | | |
| | KR 1998-42956 | A | 19981014 | | |

AB Disclosed is a pos. active material for a **lithium secondary battery** having high capacity and long durability properties and particularly to a powder of Li_aNi_{1-x-yC}OxMyO₂, Li_aNi_{1-x-yC}OxMyO₂-zFz or Li_aNi_{1-x-yC}OxMyO₂-zSz (where M is a metal selected from the group consisting of Al, Mg, Sr, La, Ce, V, and Ti and wherein 0≤x<0.99, 0.01≤y≤0.1, 0.01≤z≤0.1, and 1.00≤a≤1.1) is **surface-treated** by a metal alkoxide solution whereby the durability, capacity and structural safety of the pos. active material is increased.

IC ICM H01M004-40

ICS H01M004-52

INCL 429231100; 429231300; 429231500; 429223000; 429231600

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 49

ST cathode material prepn **lithium secondary battery**;safety cathode material prepn **lithium secondary battery**

IT Coating process

(dip; method of preparation of cathode material for **lithium secondary batteries**)

IT Secondary batteries
(lithium; method of preparation of cathode material for
lithium secondary batteries)

IT Battery cathodes
(method of preparation of cathode material for lithium secondary
batteries)

IT 1303-86-2, Boron oxide, uses 1305-78-8, Calcium oxide, uses 1309-48-4,
Magnesium oxide, uses 1313-59-3, Sodium oxide, uses 1344-28-1,
Aluminum oxide, uses 7631-86-9, Silicon oxide, uses 11099-11-9,
Vanadium oxide 11104-61-3, Cobalt oxide 12136-45-7, Potassium oxide,
uses 13463-67-7, Titanium oxide, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; method of preparation of cathode material for lithium
secondary batteries)

IT 320623-81-2P, Cobalt lanthanum lithium nickel fluoride
oxide Co0.1La0.01Li1.02Ni0.89F0.05O1.95 320623-85-6P, Cobalt
lithium magnesium nickel fluoride oxide
Co0.1Li1.02Mg0.01Ni0.89F0.05O1.95
RL: DEV (Device component use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(method of preparation of cathode material for lithium secondary
batteries)

IT 320623-81-2P, Cobalt lanthanum lithium nickel fluoride
oxide Co0.1La0.01Li1.02Ni0.89F0.05O1.95 320623-85-6P, Cobalt
lithium magnesium nickel fluoride oxide
Co0.1Li1.02Mg0.01Ni0.89F0.05O1.95
RL: DEV (Device component use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(method of preparation of cathode material for lithium secondary
batteries)

RN 320623-81-2 HCAPLUS

CN Cobalt lanthanum lithium nickel fluoride oxide
(Co0.1La0.01Li1.02Ni0.89F0.05O1.95) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 1.95 | 17778-80-2 |
| F | 0.05 | 14762-94-8 |
| Co | 0.1 | 7440-48-4 |
| Ni | 0.89 | 7440-02-0 |
| Li | 1.02 | 7439-93-2 |
| La | 0.01 | 7439-91-0 |

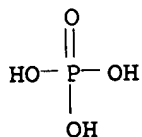
RN 320623-85-6 HCAPLUS

CN Cobalt lithium magnesium nickel fluoride oxide
(Co0.1Li1.02Mg0.01Ni0.89F0.05O1.95) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 1.95 | 17778-80-2 |
| F | 0.05 | 14762-94-8 |
| Co | 0.1 | 7440-48-4 |
| Ni | 0.89 | 7440-02-0 |
| Mg | 0.01 | 7439-95-4 |
| Li | 1.02 | 7439-93-2 |

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 13 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:413656 HCAPLUS
DN 141:56984
TI Improving cyclability of 5V cathodes by electrochemical surface
modification
AU Eftekhari, Ali
CS Electrochemical Research Center, Tehran, Iran
SO Chemistry Letters (2004), 33(5), 616-617
CODEN: CMLTAG; ISSN: 0366-7022
PB Chemical Society of Japan
DT Journal
LA English
AB A simple electrochem. procedure is proposed for surface modification of
cathode materials. A metal oxide retaining layer, deposited electrochem.
on the electroactive material, prevents direct contact with the
electrolyte. For 5V cathodes, which are oxidation agents when charged, this
action significantly enhances cyclability. The stability of the metal
oxide retaining layer deposited on the cathode surface has a significant
effect on the cyclability. This effect can be enhanced by inducing a
centrifugal force during electrodeposition of the layer.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)
ST lithium battery cathode alumina surface
treatment electrodeposition
IT Battery cathodes
Surface treatment
(improving cyclability of cathodes for lithium
batteries by electrochem. surface modification)
IT Secondary batteries
(lithium; improving cyclability of cathodes for
lithium batteries by electrochem. surface
modification)
IT 12031-75-3, Lithium manganese nickel oxide (LiMn1.5Ni0.5O4)
13824-63-0, Cobalt lithium phosphate (CoLiPO4)
106389-48-4, Iron lithium manganese oxide (FeLi2Mn3O8)
RL: DEV (Device component use); USES (Uses)
(alumina-coated, cathode; improving cyclability of cathodes for
lithium batteries by electrochem. surface
modification)
IT 1344-28-1, Alumina, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(cathode material coated with; improving cyclability of cathodes for
lithium batteries by electrochem. surface
modification)
IT 13824-63-0, Cobalt lithium phosphate (CoLiPO4)
RL: DEV (Device component use); USES (Uses)
(alumina-coated, cathode; improving cyclability of cathodes for
lithium batteries by electrochem. surface
modification)
RN 13824-63-0 HCAPLUS
CN Phosphoric acid, cobalt(2+) lithium salt (8CI, 9CI) (CA INDEX NAME)



● Co(II)

● Li

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 14 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:392154 HCAPLUS
DN 140:393378
TI Layered cathode materials for lithium ion rechargeable
batteries

IN Kang, Sun-ho; Amine, Khalil
PA The University of Chicago, USA
SO U.S. Pat. Appl. Publ., 24 pp.
CODEN: USXXCO

DT Patent
LA English

FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | US 2004091779 | A1 | 20040513 | US 2003-699484 | 20031031 |
| | US 2005058588 | A1 | 20050317 | US 2004-903514 | 20040730 |
| PRAI | US 2002-423347P | P | 20021101 | | |
| | US 2003-699484 | A2 | 20031031 | | |
| AB | A number of materials are disclosed with the composition Li _{1+x} Ni _α Mn _β Co _γ M' _δ O _{2-z} Fz (M' = Mg,Zn,Al,Ga,B,Zr,Ti) for use with rechargeable batteries, wherein x is between about 0 and 0.3, α is between about 0.2 and 0.6, β is between about 0.2 and 0.6, γ is between about 0 and 0.3, δ is between about 0 and 0.15, and z is between about 0 and 0.2. Adding the above metal and fluorine dopants affects capacity, impedance, and stability of the layered oxide structure during electrochem. cycling. | | | | |
| IC | ICM H01M004-52 ICS H01M004-50; C01G045-12; C01G051-04; C01G053-04 | | | | |
| INCL | 429231100; 429223000; 429231600; 429224000; 429231300; 423594400; 423594600; 423599000 | | | | |
| CC | 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) | | | | |
| ST | layered cathode material lithium rechargeable battery | | | | |
| IT | Battery cathodes Calcination Heat treatment Sol-gel processing Solid state reaction (layered cathode materials for lithium ion rechargeable batteries) | | | | |

IT Materials
(layered; layered cathode materials for lithium ion rechargeable batteries)

IT Secondary batteries
(lithium; layered cathode materials for lithium ion rechargeable batteries)

IT 7429-90-5, Aluminum, uses 7439-92-1, Lead, uses 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses 7440-28-0, Thallium, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-55-3, Gallium, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-69-9, Bismuth, uses 7440-74-6, Indium, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; layered cathode materials for lithium ion rechargeable batteries)

IT 373-02-4, Nickel acetate 546-89-4, Lithium acetate 555-31-7, Aluminum isopropoxide 1184-55-0, Zinc methoxide 1309-42-8, Magnesium hydroxide 1310-65-2, Lithium hydroxide 2180-18-9, Manganese acetate 5931-89-5, Cobalt acetate 7779-88-6, Zinc nitrate 7789-24-4, Lithium fluoride, processes 10377-60-3, Magnesium nitrate 12023-99-3, Gallium hydroxide 12054-48-7, Nickel hydroxide 12672-51-4, Cobalt hydroxide 13473-90-0, Aluminum nitrate 13494-90-1, Gallium nitrate 20427-58-1, Zinc hydroxide 21645-51-2, Aluminum hydroxide, processes 38218-24-5, Indium isopropoxide
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(layered cathode materials for lithium ion rechargeable batteries)

IT 128975-24-6, Lithium manganese nickel oxide $\text{LiMn}_{0.5}\text{Ni}_{0.5}\text{O}_2$
685867-50-9, Lithium manganese nickel fluoride oxide
($\text{Li}_{1-1.33}\text{Mn}_{0.2-0.67}\text{Ni}_{0.2-0.6}\text{F}_{0-0.5}\text{O}_{1.5-2}$) 685867-51-0
685867-52-1 685867-54-3 685867-55-4
685867-56-5 685867-57-6 685867-58-7,
Lithium manganese nickel fluoride oxide ($\text{LiMn}_{0.48}\text{Ni}_{0.52}\text{F}_{0.05}\text{O}_{1.95}$)
685867-60-1, Lithium manganese nickel fluoride oxide
($\text{LiMn}_{0.49}\text{Ni}_{0.51}\text{F}_{0.02}\text{O}_{1.98}$) 685867-61-2, Lithium
manganese nickel fluoride oxide ($\text{LiMn}_{0.5}\text{Ni}_{0.5}\text{F}_{0.01}\text{O}_{1.99}$) 685867-62-3,
Cobalt lithium manganese nickel oxide ($\text{Co}_{0.1}\text{Li}_{1.2}\text{Mn}_{0.55}\text{Ni}_{0.15}\text{O}_2$)
685867-63-4 685867-64-5 685867-66-7
RL: DEV (Device component use); USES (Uses)
(layered cathode materials for lithium ion rechargeable batteries)

IT 685867-50-9, Lithium manganese nickel fluoride oxide
($\text{Li}_{1-1.33}\text{Mn}_{0.2-0.67}\text{Ni}_{0.2-0.6}\text{F}_{0-0.5}\text{O}_{1.5-2}$) 685867-51-0
685867-52-1 685867-54-3 685867-55-4
685867-56-5 685867-57-6 685867-58-7,
Lithium manganese nickel fluoride oxide ($\text{LiMn}_{0.48}\text{Ni}_{0.52}\text{F}_{0.05}\text{O}_{1.95}$)
685867-60-1, Lithium manganese nickel fluoride oxide
($\text{LiMn}_{0.49}\text{Ni}_{0.51}\text{F}_{0.02}\text{O}_{1.98}$) 685867-61-2, Lithium
manganese nickel fluoride oxide ($\text{LiMn}_{0.5}\text{Ni}_{0.5}\text{F}_{0.01}\text{O}_{1.99}$)
685867-63-4 685867-64-5 685867-66-7
RL: DEV (Device component use); USES (Uses)
(layered cathode materials for lithium ion rechargeable batteries)

RN 685867-50-9 HCAPLUS

CN Lithium manganese nickel fluoride oxide ($\text{Li}_{1-1.33}\text{Mn}_{0.2-0.67}\text{Ni}_{0.2-0.6}\text{F}_{0-0.5}\text{O}_{1.5-2}$) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-------------------|-------|------------------------------|
| =====+=====+===== | | |

| | | |
|----|------------|------------|
| O | 1.5 - 2 | 17778-80-2 |
| F | 0 - 0.5 | 14762-94-8 |
| Ni | 0.2 - 0.6 | 7440-02-0 |
| Mn | 0.2 - 0.67 | 7439-96-5 |
| Li | 1 - 1.33 | 7439-93-2 |

RN 685867-51-0 HCAPLUS

CN Cobalt lithium manganese nickel fluoride oxide (Co0.01-0.33Li1-1.33Mn0.2-0.67Ni0.2-0.6F0-0.5O1.5-2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------------|------------------------------|
| ===== | | |
| O | 1.5 - 2 | 17778-80-2 |
| F | 0 - 0.5 | 14762-94-8 |
| Co | 0.01 - 0.33 | 7440-48-4 |
| Ni | 0.2 - 0.6 | 7440-02-0 |
| Mn | 0.2 - 0.67 | 7439-96-5 |
| Li | 1 - 1.33 | 7439-93-2 |

RN 685867-52-1 HCAPLUS

CN Aluminum lithium manganese nickel fluoride oxide (Al0.01-0.2Li1-1.33Mn0.2-0.67Ni0.2-0.6F0-0.5O1.5-2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|------------|------------------------------|
| ===== | | |
| O | 1.5 - 2 | 17778-80-2 |
| F | 0 - 0.5 | 14762-94-8 |
| Ni | 0.2 - 0.6 | 7440-02-0 |
| Mn | 0.2 - 0.67 | 7439-96-5 |
| Li | 1 - 1.33 | 7439-93-2 |
| Al | 0.01 - 0.2 | 7429-90-5 |

RN 685867-54-3 HCAPLUS

CN Lithium manganese nickel titanium fluoride oxide (Li1-1.33Mn0.2-0.67Ni0.2-0.6Ti0.01-0.2F0-0.5O1.5-2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|------------|------------------------------|
| ===== | | |
| O | 1.5 - 2 | 17778-80-2 |
| F | 0 - 0.5 | 14762-94-8 |
| Ti | 0.01 - 0.2 | 7440-32-6 |
| Ni | 0.2 - 0.6 | 7440-02-0 |
| Mn | 0.2 - 0.67 | 7439-96-5 |
| Li | 1 - 1.33 | 7439-93-2 |

RN 685867-55-4 HCAPLUS

CN Aluminum cobalt Lithium manganese nickel fluoride oxide (Al0.01-0.2Co0.01-0.33Li1-1.33Mn0.2-0.67Ni0.2-0.6F0-0.5O1.5-2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------------|------------------------------|
| ===== | | |
| O | 1.5 - 2 | 17778-80-2 |
| F | 0 - 0.5 | 14762-94-8 |
| Co | 0.01 - 0.33 | 7440-48-4 |
| Ni | 0.2 - 0.6 | 7440-02-0 |

| | | |
|----|------------|-----------|
| Mn | 0.2 - 0.67 | 7439-96-5 |
| Li | 1 - 1.33 | 7439-93-2 |
| Al | 0.01 - 0.2 | 7429-90-5 |

RN 685867-56-5 HCAPLUS

CN Cobalt lithium manganese nickel titanium fluoride oxide
(Co0.01-0.33Li1-1.33Mn0.2-0.67Ni0.2-0.6Ti0.01-0.2F0-0.5O1.5-2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------------|---------------------------|
| O | 1.5 - 2 | 17778-80-2 |
| F | 0 - 0.5 | 14762-94-8 |
| Co | 0.01 - 0.33 | 7440-48-4 |
| Ti | 0.01 - 0.2 | 7440-32-6 |
| Ni | 0.2 - 0.6 | 7440-02-0 |
| Mn | 0.2 - 0.67 | 7439-96-5 |
| Li | 1 - 1.33 | 7439-93-2 |

RN 685867-57-6 HCAPLUS

CN Cobalt lithium manganese nickel fluoride oxide
(Co0.2LiMn0.38Ni0.42F0.05O1.95) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|---------------------------|
| O | 1.95 | 17778-80-2 |
| F | 0.05 | 14762-94-8 |
| Co | 0.2 | 7440-48-4 |
| Ni | 0.42 | 7440-02-0 |
| Mn | 0.38 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

RN 685867-58-7 HCAPLUS

CN Lithium manganese nickel fluoride oxide (LiMn0.48Ni0.52F0.05O1.95) (9CI)
(CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|---------------------------|
| O | 1.95 | 17778-80-2 |
| F | 0.05 | 14762-94-8 |
| Ni | 0.52 | 7440-02-0 |
| Mn | 0.48 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

RN 685867-60-1 HCAPLUS

CN Lithium manganese nickel fluoride oxide (LiMn0.49Ni0.51F0.02O1.98) (9CI)
(CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|---------------------------|
| O | 1.98 | 17778-80-2 |
| F | 0.02 | 14762-94-8 |
| Ni | 0.51 | 7440-02-0 |
| Mn | 0.49 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

RN 685867-61-2 HCAPLUS

CN Lithium manganese nickel fluoride oxide (LiMn0.5Ni0.5F0.01O1.99) (9CI)
(CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 1.99 | 17778-80-2 |
| F | 0.01 | 14762-94-8 |
| Ni | 0.5 | 7440-02-0 |
| Mn | 0.5 | 7439-96-5 |
| Li | 1 | 7439-93-2 |

RN 685867-63-4 HCAPLUS

CN Cobalt lithium manganese nickel fluoride oxide
(Co0.1Li1.2Mn0.54Ni0.16F0.02O1.98) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 1.98 | 17778-80-2 |
| F | 0.02 | 14762-94-8 |
| Co | 0.1 | 7440-48-4 |
| Ni | 0.16 | 7440-02-0 |
| Mn | 0.54 | 7439-96-5 |
| Li | 1.2 | 7439-93-2 |

RN 685867-64-5 HCAPLUS

CN Cobalt lithium manganese nickel fluoride oxide
(Co0.1Li1.2Mn0.52Ni0.18F0.05O1.95) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 1.95 | 17778-80-2 |
| F | 0.05 | 14762-94-8 |
| Co | 0.1 | 7440-48-4 |
| Ni | 0.18 | 7440-02-0 |
| Mn | 0.52 | 7439-96-5 |
| Li | 1.2 | 7439-93-2 |

RN 685867-66-7 HCAPLUS

CN Cobalt lithium manganese nickel fluoride oxide
(Co0.1Li1.2Mn0.5Ni0.2F0.1O1.9) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|------------------------------|
| ===== | ===== | ===== |
| O | 1.9 | 17778-80-2 |
| F | 0.1 | 14762-94-8 |
| Co | 0.1 | 7440-48-4 |
| Ni | 0.2 | 7440-02-0 |
| Mn | 0.5 | 7439-96-5 |
| Li | 1.2 | 7439-93-2 |

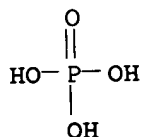
L44 ANSWER 15 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:959913 HCAPLUS

DN 140:306587

TI Surface modification by silver coating for improving electrochemical

properties of LiFePO₄
AU Park, K. S.; Son, J. T.; Chung, H. T.; Kim, S. J.; Lee, C. H.; Kang, K.
T.; Kim, H. G.
CS Department of Materials Science and Engineering, KAIST, Daejeon, 305701,
S. Korea
SO Solid State Communications (2004), 129(5), 311-314
CODEN: SSCOAA; ISSN: 0038-1098
PB Elsevier Science Ltd.
DT Journal
LA English
AB LiFePO₄ is a candidate cathode material for Li secondary
batteries. Fine particles of LiFePO₄ was synthesized by co-precipitation
and aqueous coating on the LiFePO₄ was performed with a Ag nitrate solution to
increase electronic conductivity. Highly dispersed Ag on the particles enhances
the electronic conductivity and increases the capacity. The electrochem.
properties of the Ag-coated LiFePO₄ at various current densities are
similar to that of highly-conductive LiFePO₄. The Ag coating helps to
retain capacity even at high current densities.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)
Section cross-reference(s): 66
ST iron lithium phosphate cathode surface silver coating
lithium battery
IT Battery cathodes
Surface treatment
(improving electrochem. properties of LiFePO₄ cathode material for
lithium batteries by silver coating)
IT Secondary batteries
(lithium; improving electrochem. properties of LiFePO₄
cathode material for lithium batteries by silver
coating)
IT 7440-22-4, Silver, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(improving electrochem. properties of LiFePO₄ cathode material for
lithium batteries by silver coating)
IT 15365-14-7, Iron lithium phosphate (FeLiPO₄)
RL: DEV (Device component use); USES (Uses)
(silver coated; improving electrochem. properties of LiFePO₄ cathode
material for lithium batteries by silver coating)
IT 15365-14-7, Iron lithium phosphate (FeLiPO₄)
RL: DEV (Device component use); USES (Uses)
(silver coated; improving electrochem. properties of LiFePO₄ cathode
material for lithium batteries by silver coating)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (9CI) (CA INDEX NAME)



● Fe(II)

● Li

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 16 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:892315 HCAPLUS
DN 139:352745
TI Process of preparing active material for a **battery**
IN Cho, Jae-phil; Park, Yong-chul; Jung, Won-il; Kim, Geun-bae
PA S. Korea
SO U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO

DT Patent
LA English

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---------------|------|----------|-----------------|----------|
| PI | US 2003211391 | A1 | 20031113 | US 2003-408124 | 20030408 |
| | KR 2003088246 | A | 20031119 | KR 2002-26199 | 20020513 |
| | JP 2003331846 | A2 | 20031121 | JP 2003-61868 | 20030307 |
| | CN 1458704 | A | 20031126 | CN 2003-128698 | 20030506 |
| PRAI | KR 2002-26199 | A | 20020513 | | |

AB A process for preparing an active material for a **battery** includes the steps of preparing a coating liquid by adding a compound comprising an element X that is capable of forming a double bond with oxygen, and a compound comprising at least one from the group consisting of an alkali metal, an alkaline earth metal, a Group 13 element, a Group 14 element, a transition metal, and a rare-earth element, to water, adding a metal source to the coating liquid to **surface-treat** the metal source material, drying the **surface-treated** metal source material to prepare an active material precursor; mixing the active material precursor with a **lithium** source; and heat-treating the resultant mixture to produce an active material with a **surface-treatment layer** comprising the compound: MXOk wherein M is at least one selected from the group consisting of an alkali metal, an alkaline earth metal, a Group 13 element, a Group 14 element, a transition metal, and a rare-earth element; X is an element that can form a double bond with oxygen; and k is a numerical value in the range of 2 to 4.

IC ICM H01M004-48

INCL 429218100

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

ST **battery** cathode active material prepnIT **Battery** cathodes

(process of preparing active material for battery)

IT 147098-69-9, Cobalt nickel hydroxide $\text{Co}_{0.1}\text{Ni}_{0.9}(\text{OH})_2$ 619322-77-9, Cobalt manganese nickel carbonate $(\text{Co}_{0.1}\text{Mn}_{0.1}\text{Ni}_{0.8}(\text{CO}_3))$ 619322-78-0, Cobalt manganese nickel nitrate $(\text{Co}_{0.1}\text{Mn}_{0.1}\text{Ni}_{0.8}(\text{NO}_3)_2)$ 619322-79-1, Cobalt lanthanum nickel hydroxide $(\text{Co}_{0.1}\text{La}_{0.01}\text{Ni}_{0.89}(\text{OH})_2)$ 619322-80-4, Cobalt manganese nickel sulfate $(\text{Co}_{0.1}\text{Mn}_{0.1}\text{Ni}_{0.8}(\text{SO}_4))$
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(process of preparing active material for battery)

IT 179802-95-0P, Cobalt lithium manganese nickel oxide $\text{Co}_{0.1}\text{LiMn}_{0.1}\text{Ni}_{0.8}\text{O}_2$ 619322-75-7P, Cobalt lithium manganese nickel oxide $(\text{Co}_{0.1}\text{Li}_{1.03}\text{Mn}_{0.1}\text{Ni}_{0.8}\text{O}_2)$
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(process of preparing active material for battery)

IT 619322-76-8, Aluminum phosphorus oxide (AlPO_2-4)
 RL: TEM (Technical or engineered material use); USES (Uses)
 (surface coating; process of preparing active material for battery)

IT 619322-80-4, Cobalt manganese nickel sulfate $(\text{Co}_{0.1}\text{Mn}_{0.1}\text{Ni}_{0.8}(\text{SO}_4))$
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(process of preparing active material for battery)

RN 619322-80-4 HCAPLUS
 CN Cobalt manganese nickel sulfate $(\text{Co}_{0.1}\text{Mn}_{0.1}\text{Ni}_{0.8}(\text{SO}_4))$ (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|---------------------------|
| ===== | ===== | ===== |
| O4S | 1 | 14808-79-8 |
| Co | 0.1 | 7440-48-4 |
| Ni | 0.8 | 7440-02-0 |
| Mn | 0.1 | 7439-96-5 |

IT 619322-76-8, Aluminum phosphorus oxide (AlPO_2-4)
 RL: TEM (Technical or engineered material use); USES (Uses)
 (surface coating; process of preparing active material for battery)

RN 619322-76-8 HCAPLUS
 CN Aluminum phosphorus oxide (AlPO_2-4) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|-----------|-------|---------------------------|
| ===== | ===== | ===== |
| O | 2 - 4 | 17778-80-2 |
| P | 1 | 7723-14-0 |
| Al | 1 | 7429-90-5 |

L44 ANSWER 17 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2003:581675 HCAPLUS
 DN 139:397835

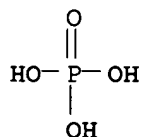
TI Surface Chemistry of Carbon-Treated LiFePO_4 Particles
 for Li-Ion Battery Cathodes Studied by PES

AU Herstedt, Marie; Stjerndahl, Marten; Nyten, Anton; Gustafsson, Torbjorn;
 Rensmo, Hakan; Siegbahn, Hans; Ravet, Nathalie; Armand, Michel; Thomas,
 John O.; Edstrom, Kristina

CS Department of Materials Chemistry, Ångström Advanced Battery Centre,

Uppsala University, Uppsala, SE-751 21, Swed.
SO Electrochemical and Solid-State Letters (2003), 6(9), A202-A206
CODEN: ESLEF6; ISSN: 1099-0062
PB Electrochemical Society
DT Journal
LA English
AB Photoelectron spectroscopy (PES) was used for depth-profile characterization of the interface formed on C-treated LiFePO₄ particles in the cathode of a Li-ion battery after electrochem. cycling at 23 and 40° in a 1M LiPF₆ mixture of ethylene carbonate and di-Et carbonate. Products from solvent reactions, e.g., polycarbonates, were not detected on the C-treated LiFePO₄ surface, contrary to findings for other cathode materials. Salt-based products like LiF, LiPF₆, Li_xPF_y- and Li_xPF_yO_z-type compds. were found on the cathode surface after cycling. Larger amts. of these compds. were detected on the surfaces of electrodes cycled at 40°.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 66, 72
ST iron lithium phosphate carbon cathode surface chem
lithium battery
IT Secondary batteries
(lithium; surface chemical of carbon-treated LiFePO₄ particles in Li-ion battery cathodes)
IT Photoelectron spectroscopy
(surface chemical of carbon-treated LiFePO₄ for Li-ion battery cathodes studied by photoelectron spectroscopy)
IT Battery cathodes
(surface chemical of carbon-treated LiFePO₄ particles in Li-ion battery cathodes)
IT 15365-14-7, Iron lithium phosphate (FeLiPO₄)
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(carbon-treated, cathode; surface chemical of carbon-treated LiFePO₄ particles in Li-ion battery cathodes)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electrolyte containing; surface chemical of carbon-treated LiFePO₄ particles in cathodes for Li-ion batteries with)
IT 21324-40-3, Lithium hexafluorophosphate (LiPF₆)
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(electrolyte; surface chemical of carbon-treated LiFePO₄ particles in cathodes for Li-ion batteries with)
IT 7789-24-4, Lithium fluoride (LiF), formation (nonpreparative)
21324-40-3D, Lithium hexafluorophosphate, lithium- and fluorine-deficient
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(in surface chemical of carbon-treated LiFePO₄ for Li-ion battery cathodes)
IT 7440-44-0, Carbon, uses
RL: MOA (Modifier or additive use); USES (Uses)
(iron lithium phosphate containing; surface chemical of carbon-treated LiFePO₄ particles in Li-ion battery cathodes)

IT 15365-14-7, Iron lithium phosphate (FeLiPO4)
 RL: CPS (Chemical process); DEV (Device component use); PEP
 (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (carbon-treated, cathode; surface chemical of carbon-
 treated LiFePO4 particles in Li-ion battery
 cathodes)
 RN 15365-14-7 HCAPLUS
 CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (9CI) (CA INDEX NAME)



● Fe (II)

● Li

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 18 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:538368 HCAPLUS

DN 139:310011

TI Positive plate for alkaline batteries

IN Grigor'eva, L. K.; Zhuchenko, O. A.; Petrov, V. V.

PA Russia

SO Russ., No pp. given

CODEN: RUXXE7

DT Patent

LA Russian

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | RU 2207664 | C1 | 20030627 | RU 2002-103847 | 20020218 |
| PRAI | RU 2002-103847 | | 20020218 | | |

AB The battery cathode contains a Ni sponge current outlet (d. of 0.2-2.5 g/cm³, pore size 0.6-2.5 mm diameter) and an active mass which is a mixture of Ni hydroxide and Ni powder. The active mass contains Ni hydroxide 45-75, Ni powder 20-40, and an activator (e.g., Co compound, Ba(OH)₂ 2-3 weight%. Bulk d. of Ni powder is 0.2-1.5 g/cm³. The active mass may also contain a 2-5% binder. A plate surface may be covered with a porous layer of an alkaline-resistant lacquer. The electrode has an enhanced activity.

IC ICM H01M004-52

ICS H01M010-24

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery cathode nickel hydroxide nickel

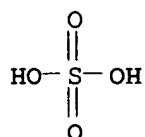
IT Battery cathodes

(for alkaline batteries)

IT 17194-00-2, Barium hydroxide

RL: MOA (Modifier or additive use); USES (Uses)

(activator in cathode for alkaline batteries)
 IT 10124-43-3, Cobalt sulfate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (activator in cathode for alkaline batteries)
 IT 7440-02-0, Nickel, uses 12054-48-7, Nickel hydroxide
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in cathode for alkaline batteries)
 IT 10124-43-3, Cobalt sulfate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (activator in cathode for alkaline batteries)
 RN 10124-43-3 HCAPLUS
 CN Sulfuric acid, cobalt(2+) salt (1:1) (8CI, 9CI) (CA INDEX NAME)



● Co(II)

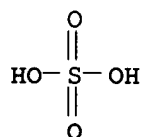
L44 ANSWER 19 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2003:274599 HCAPLUS
 DN 139:24095
 TI Positive plate active mass for batteries
 IN Agadullina, E. A.; Belyaev, A. L.; Il'enko, E. V.; Lositskii, A. F.;
 Polyanskii, A. I.; Rodchenkov, N. V.; Cheremnykh, G. S.; Shtutsa, M. G.
 PA Otkrytoe Aktsionernoe Obshchestvo "Chepetskii Mekhanicheskii Zavod",
 Russia
 SO Russ., No pp. given
 CODEN: RUXXE7
 DT Patent
 LA Russian
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | RU 2194341 | C1 | 20021210 | RU 2001-111310 | 20010423 |
| PRAI | RU 2001-111310 | | 20010423 | | |

AB The pos. plate active mass consists of Ni(OH)₂ 57-70, Co 1-6, CoO 1-6, Co sulfate 0.5-2, poly(vinyl alc.) 0.1-0.5, EtOH 5-10 weight%, and deionized water balance. The active mass structure includes Ni(OH)₂ spherical particles covered with a thin layer of Co sulfate and surrounded by smaller spherical particles of Co and CoO. The active mass has an enhanced elec. conductivity. Operation time of the battery is increased without changing an electrolyte.

IC ICM H01M004-32
 ICS H01M004-52; H01M010-30
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary battery cathode nickel hydroxide
 IT Battery cathodes
 (nickel hydroxide-based active mass for)
 IT Secondary batteries
 (pos. plate active mass for)
 IT 64-17-5, Ethanol, uses 1307-96-6, Cobalt oxide (CoO), uses 7440-48-4, Cobalt, uses 9002-89-5, Poly(vinyl alcohol) 10124-43-3, Cobalt

sulfate 12054-48-7, Nickel hydroxide (Ni(OH)₂
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in pos. plate active mass for secondary batteries)
 IT 10124-43-3, Cobalt sulfate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in pos. plate active mass for secondary batteries)
 RN 10124-43-3 HCAPLUS
 CN Sulfuric acid, cobalt(2+) salt (1:1) (8CI, 9CI) (CA INDEX NAME)



● Co(II)

L44 ANSWER 20 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2002:963814 HCAPLUS
 DN 138:26929
 TI Method for preparation of active material for **battery**
 IN Cho, Jae-phil; Kim, Geun-bae; Hwang, Sang-moon
 PA Samsung Sdi Co., Ltd., S. Korea
 SO Eur. Pat. Appl., 52 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------------|----------|
| PI | EP 1267431 | A1 | 20021218 | EP 2002-8296 | 20020423 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| | US 2003082448 | A1 | 20030501 | <u>US 2001-995868</u> | 20011129 |
| | KR 2002095421 | A | 20021226 | KR 2002-9619 | 20020222 |
| | JP 2003007299 | A2 | 20030110 | JP 2002-127806 | 20020430 |
| | CN 1399364 | A | 20030226 | CN 2002-118951 | 20020430 |
| PRAI | US 2001-297783P | P | 20010614 | | |
| | US 2001-304793P | P | 20010713 | | |
| | US 2001-995868 | A | 20011129 | | |

AB An active material for a **battery** has a **surface-treatment layer** including a compound of the formula: MXOk wherein M is at least one element selected from an alkali metal, an alkaline earth metal, a group 13 element, a group 14 element, a transition metal, and a rare-earth element [e.g. Na, K, Mg, Ca, Sr, Ni, Co, Si, Ti, B, Al, Sn, Mn, Cr, Fe, V, Zr], X is an element capable of forming a double bond with oxygen, e.g. P, S or W, and k is a numerical value in the range of 2 to 4.
 IC ICM H01M004-62
 CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
 ST **battery** electrode active material
 IT Chalcogenides
 Oxides (inorganic), uses
 RL: DEV (Device component use); USES (Uses)

(Li-containing; method for preparation of active material for battery)

IT Secondary batteries
(lead-acid; method for preparation of active material for battery)

IT Secondary batteries
(lithium; method for preparation of active material for battery)

IT Battery electrodes
Primary batteries
Secondary batteries
(method for preparation of active material for battery)

IT Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(method for preparation of active material for battery)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(method for preparation of active material for battery)

IT 7784-30-7, Aluminum phosphate
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; method for preparation of active material for battery)

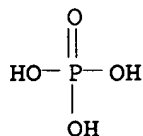
IT 7783-28-0, Diammonium hydrogen phosphate 13473-90-0, Aluminum nitrate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(method for preparation of active material for battery)

IT 7439-93-2D, Lithium, intercalation compound 7440-21-3, Silicon, uses 7704-34-9D, Sulfur, compound 12190-79-3, Cobalt lithium oxide colio2 18282-10-5, Tin dioxide 163596-49-4, Lithium manganese nickel oxide LiMn0.2Ni0.8O2 262857-75-0, Cobalt lithium nickel strontium oxide Co0.1LiNi0.9Sr0.002O2 406939-73-9, Aluminum cobalt lithium magnesium manganese nickel oxide Al0.07Co0.1Li1.03Mg0.07Mn0.19Ni0.69O2
RL: DEV (Device component use); USES (Uses)
(method for preparation of active material for battery)

IT 7784-30-7, Aluminum phosphate
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; method for preparation of active material for battery)

RN 7784-30-7 HCAPLUS

CN Phosphoric acid, aluminum salt (1:1) (8CI, 9CI) (CA INDEX NAME)



● Al

IT 7439-93-2D, Lithium, intercalation compound
RL: DEV (Device component use); USES (Uses)
(method for preparation of active material for battery)

RN 7439-93-2 HCAPLUS

CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 21 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:518133 HCAPLUS

DN 137:96240

TI Cathode active mass containing cobalt rare earth hydroxide, its
manufacture, and secondary alkaline **battery** using it

IN Furukawa, Kengo; Kodama, Mitsuhiro; Kurokuzuhara, Minoru; Hatsuyo, Kaori;
Watada, Shoji; Oshitani, Masahiko

PA Yuasa Corporation, Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | JP 2002198046 | A2 | 20020712 | JP 2000-392117 | 20001225 |
| PRAI | JP 2000-392117 | | 20001225 | | |

AB The title active mass, for a cathode consisting of a core layer containing Ni
hydroxide and a surface layer containing a hydroxide of Co and rare earth
metal, contains Co having ≥ 3 valency after oxidation **treatment**
in the **surface layer**. The active mass is manufactured by
oxidation treatment with an oxidizing agent in an aqueous alkali solution
containing K,

Na, and/or Li. A secondary alkaline **battery** equipped with
the above cathode active mass is also claimed. The **battery**
provides good charging characteristics by keeping high-rate discharge
characteristics.

IC ICM H01M004-52

ICS H01M004-32; H01M010-30

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy
Technology)

ST cobalt rare earth hydroxide nickel cathode oxidn alk **battery**

IT Chlorates

Chlorites

Hypochlorites

RL: NUU (Other use, unclassified); USES (Uses)

(oxidizing agent; oxidation in manufacture of cobalt rare earth hydroxide in
nickel cathode for alkaline **battery**)

IT **Battery** cathodes

Oxidation

Oxidizing agents

Secondary **batteries**

(oxidation in manufacture of cobalt rare earth hydroxide in nickel cathode

for

alkaline **battery**)

IT 7727-21-1

RL: NUU (Other use, unclassified); USES (Uses)

(oxidizing agent; oxidation in manufacture of cobalt rare earth hydroxide in
nickel cathode for alkaline **battery**)

IT 12054-48-7, Nickel hydroxide

RL: DEV (Device component use); USES (Uses)

(oxidation in manufacture of cobalt rare earth hydroxide in nickel cathode

for

alkaline **battery**)

IT 215057-05-9P, Cobalt yttrium hydroxide 441769-57-9P, Cobalt ytterbium
hydroxide 441769-58-0P, Cobalt erbium hydroxide 441769-59-1P, Cobalt

thulium hydroxide 441769-60-4P, Cobalt lutetium hydroxide 441769-61-5P
441769-98-8P, Cobalt holmium hydroxide

RL: DEV (Device component use); IMF (Industrial manufacture); PREP
(Preparation); USES (Uses)

(oxidation in manufacture of cobalt rare earth hydroxide in nickel cathode
for

alkaline battery)

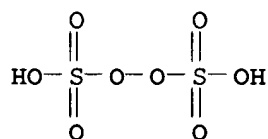
IT 7727-21-1

RL: NUU (Other use, unclassified); USES (Uses)

(oxidizing agent; oxidation in manufacture of cobalt rare earth hydroxide in
nickel cathode for alkaline battery)

RN 7727-21-1 HCAPLUS

CN Peroxydisulfuric acid ([(HO)S(O)2]2O2), dipotassium salt (9CI) (CA INDEX
NAME)



● 2 K

L44 ANSWER 22 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1999:365929 HCAPLUS

DN 131:33888

TI **Surface-treated** hydrogen-absorbing alloys,
surface treatment process, and hydride electrodes made
of **surface-treated** hydrogen-absorbing alloys

IN Kotani, Akira; Sakai, Tetsuo; Kuriyama, Nobuhiro; Ishihara, Kazuhiko

PA Okuno Chemical Industry Co., Ltd., Japan; Agency of Industrial Sciences
and Technology

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | JP 11154511 | A2 | 19990608 | JP 1997-336510 | 19971119 |
| PRAI | JP 1997-336510 | | 19971119 | | |

AB Zr-Ni alloys having surface layers mainly comprising metallic Ni
fine-grain particles are claimed. Zr-Ni H-absorbing alloys are
surface treated with an alkaline solution containing a dissolving
agent and a reducing agent to give the above alloys. Hydride electrodes
that are unified products of collectors with powders containing the
surface-treated alloys are also claimed.
Batteries having high capacity and excellent initial activation
characteristics can be manufactured

IC ICM H01M004-38

ICS B22F001-00; B22F001-02; C22C019-00; C23C018-31; C23C018-36;
H01M004-24

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy
Technology)

Section cross-reference(s): 56

ST **surface treatment** hydrogen absorbing alloy electrode;
zirconium nickel alloy **battery** electrode

IT Etching
(alkaline; **surface treatment** of Zr-Ni H-absorbing
alloys for formation of Ni particle-containing surface layers for hydride
electrodes)

IT Alloys, uses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(hydrogen-absorbing; **surface treatment** of Zr-Ni
H-absorbing alloys for formation of Ni particle-containing surface layers
for hydride electrodes)

IT **Battery** anodes
(**surface treatment** of Zr-Ni H-absorbing alloys for
formation of Ni particle-containing surface layers for hydride electrodes)

IT 7440-02-0P, Nickel, uses
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(**surface layer** containing; **surface
treatment** of Zr-Ni H-absorbing alloys for formation of Ni
particle-containing surface layers for hydride electrodes)

IT 193678-39-6
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(**surface treatment** of Zr-Ni H-absorbing alloys for
formation of Ni particle-containing surface layers for hydride electrodes)

IT 56-40-6, Glycine, uses 74-94-2, Dimethylamine borane 127-09-3, Sodium
acetate 139-33-3, Ethylenediamine tetraacetic acid disodium salt
302-01-2, Hydrazine, uses 304-59-6, Potassium sodium tartrate, uses
1310-58-3, Potassium hydroxide, uses 1310-65-2, **Lithium**
hydroxide 1310-73-2, Sodium hydroxide, uses **7681-53-0**, Sodium
hypophosphite 16940-66-2, Sodium borohydride
RL: NUU (Other use, unclassified); USES (Uses)
(**treatment in; surface treatment** of Zr-Ni
H-absorbing alloys for formation of Ni particle-containing surface layers
for hydride electrodes)

IT **7681-53-0**, Sodium hypophosphite
RL: NUU (Other use, unclassified); USES (Uses)
(**treatment in; surface treatment** of Zr-Ni
H-absorbing alloys for formation of Ni particle-containing surface layers
for hydride electrodes)

RN 7681-53-0 HCAPLUS

CN Phosphinic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

O= PH₂-OH

● Na

L44 ANSWER 23 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:40015 HCAPLUS
DN 130:98063
TI Nonaqueous electrolyte **batteries**
IN Fukuda, Yutaka; Tanaka, Keiichi; Hosokawa, Takehiro
PA Sumitomo Electric Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.

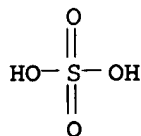
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|----------|
| PI | JP 11007921 | A2 | 19990112 | JP 1997-336218 | 19971208 |
| | JP 3137061 | B2 | 20010219 | | |
| PRAI | JP 1997-103766 | A | 19970422 | | |
| AB | The batteries have electrodes and an electrolyte sealed in a metal-polymer laminate bag, where the electrolyte side of the metal layer is covered with an acid modified polyethylene, acid modified polypropylene, or an ionomer layer by hot pressing. | | | | |
| IC | ICM H01M002-02 | | | | |
| | ICS H01M002-06; H01M010-40 | | | | |
| CC | 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) | | | | |
| ST | battery case metal acid modified polymer; polyethylene acid modified metal battery case; polypropylene acid modified metal battery case; ionomer metal laminate battery case | | | | |
| IT | Primary batteries | | | | |
| | Secondary batteries | | | | |
| | (aluminum foils laminated with acid modified polyethylene on electrolyte side for nonaq. electrolyte batteries) | | | | |
| IT | 9002-88-4, Polyethylene 9003-07-0, Polypropylene | | | | |
| | RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) | | | | |
| | (acid modified; aluminum foils laminated with acid modified polyethylene on electrolyte side for nonaq. electrolyte batteries) | | | | |
| IT | 471-34-1, Calcium carbonate, uses 1309-48-4, Magnesia, uses | | | | |
| | 7487-88-9, Magnesium sulfate, uses | | | | |
| | RL: MOA (Modifier or additive use); USES (Uses) | | | | |
| | (acid trapping agents in acid modified polymer layer laminated with aluminum foils for nonaq. electrolyte batteries) | | | | |
| IT | 7429-90-5, Aluminum, uses | | | | |
| | RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) | | | | |
| | (aluminum foils laminated with acid modified polyethylene on electrolyte side for nonaq. electrolyte batteries) | | | | |
| IT | 98036-77-2, Hydrotalcite | | | | |
| | RL: MOA (Modifier or additive use); USES (Uses) | | | | |
| | (fired; acid trapping agents in acid modified polymer layer laminated with aluminum foils for nonaq. electrolyte batteries) | | | | |
| IT | 7487-88-9, Magnesium sulfate, uses | | | | |
| | RL: MOA (Modifier or additive use); USES (Uses) | | | | |
| | (acid trapping agents in acid modified polymer layer laminated with aluminum foils for nonaq. electrolyte batteries) | | | | |
| RN | 7487-88-9 HCAPLUS | | | | |
| CN | Sulfuric acid magnesium salt (1:1) (8CI, 9CI) (CA INDEX NAME) | | | | |



● Mg

L44 ANSWER 24 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1997:433205 HCAPLUS

DN 127:97546

TI Nonaqueous electrolyte **batteries** with good storage stabilityIN Yanai, Atsushi; Kusumoto, Yasuyuki; Yamazaki, Mikiya; Noma, Toshiyuki;
Nishio, Koji

PA Sanyo Electric Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | JP 09147840 | A2 | 19970606 | JP 1995-329509 | 19951124 |
| | JP 3443224 | B2 | 20030902 | | |
| PRAI | JP 1995-329509 | | 19951124 | | |

AB Anodes of the **batteries** are obtained by addition of ammonium sulfates to Mn oxide-based anode materials and subsequent heat treatment of the mixts. Preferably, 0.1-30 mol% (per Mn) ammonium sulfates are added. Preferably, ammonium sulfates of Fe²⁺, Co²⁺, or Al are used. The ammonium sulfates react with the Mn oxides in the anode materials to form composite oxides, which protect surface of the Mn oxides and prevent reaction of the Mn oxides with nonaq. electrolyte solns. As a result, self-discharge is decreased and storage stability is improved.

IC ICM H01M004-06

ICS H01M004-08; H01M004-50; H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)ST manganese oxide anode nonaq electrolyte **battery**; ammonium
sulfate treatment manganese oxide anode; storage stability nonaq
electrolyte **battery** anodeIT **Battery** anodes

(nonaq. electrolyte **batteries** having anodes containing Mn oxides
surface-treated with ammonium sulfates for good
storage stability)

IT 1313-13-9, Manganese oxide (MnO₂), uses 7783-20-2, Ammonium sulfate,
uses 7783-83-7 7784-25-0, Aluminum ammonium sulfate
(AlNH₄(SO₄)₂) 13586-38-4 15699-18-0 31512-54-6
39457-42-6, Lithium manganese oxide

RL: DEV (Device component use); PRP (Properties); USES (Uses)

(nonaq. electrolyte **batteries** having anodes containing Mn oxides
surface-treated with ammonium sulfates for good
storage stability)

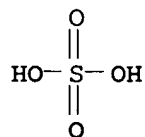
IT 7783-83-7 7784-25-0, Aluminum ammonium sulfate
(AlNH₄(SO₄)₂) 13586-38-4 15699-18-0 31512-54-6

RL: DEV (Device component use); PRP (Properties); USES (Uses)

(nonaq. electrolyte **batteries** having anodes containing Mn oxides
surface-treated with ammonium sulfates for good
storage stability)

RN 7783-83-7 HCAPLUS

CN Sulfuric acid, ammonium iron(3+) salt (2:1:1), dodecahydrate (8CI, 9CI)
(CA INDEX NAME)



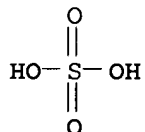
●1/2 Fe(III)

●1/2 NH₃

●6 H₂O

RN 7784-25-0 HCAPLUS

CN Sulfuric acid, aluminum ammonium salt (2:1:1) (8CI, 9CI) (CA INDEX NAME)

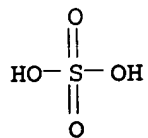


●1/2 Al

●1/2 NH₃

RN 13586-38-4 HCAPLUS

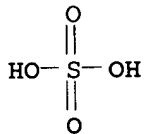
CN Sulfuric acid, ammonium cobalt(2+) salt (2:2:1), hexahydrate (8CI, 9CI)
(CA INDEX NAME)



● 1/2 Co(II)

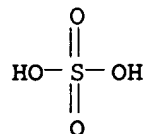
● NH₃● 3 H₂O

RN 15699-18-0 HCAPLUS
CN Sulfuric acid, ammonium nickel(2+) salt (2:2:1) (8CI, 9CI) (CA INDEX NAME)

● NH₃

● 1/2 Ni(II)

RN 31512-54-6 HCAPLUS
CN Sulfuric acid, ammonium iron(3+) salt (2:1:1), hexahydrate (9CI) (CA INDEX NAME)



●1/2 Fe(III)

●1/2 NH₃●3 H₂O

L44 ANSWER 25 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1993:150990 HCAPLUS

DN 118:150990

TI Secondary nonaqueous-electrolyte **lithium battery**

IN Sekai, Kohji; Endo, Takuya

PA Sony Corp., Japan

SO Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| | ----- | ---- | ----- | ----- | ----- |
| PI | EP 511632 | A1 | 19921104 | EP 1992-107216 | 19920428 |
| | EP 511632 | B1 | 19971119 | | |
| | R: DE, FR, GB | | | | |
| | JP 04329267 | A2 | 19921118 | JP 1991-126913 | 19910430 |
| | JP 05013082 | A2 | 19930122 | JP 1991-185129 | 19910629 |
| PRAI | JP 1991-126913 | A | 19910430 | | |
| | JP 1991-185129 | A | 19910629 | | |

AB The **battery** has a Li or a Li-intercalatable carbonaceous anode and a Li_xTi_yCo_{1-y}O₂ cathode, where x ≤ 1.10 and 0 < y ≤ 0.05. The cathode can also be an inorg. compound with a Ti-added surface layer, which can be formed by **surface treatment** of the compound with a Ti-coupling agent and a subsequent heat treatment.

IC ICM H01M004-58

ICS H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)ST cathode **battery** **lithium** cobalt oxide; **lithium** cobalt titanium oxide cathodeIT **Batteries**, secondary
(**lithium/lithium** cobalt titanium oxide, long cycle-life)IT Cathodes
(**battery**, **lithium** cobalt titanium oxide)

IT 7440-32-6, Titanium, uses
 RL: USES (Uses)
 (cathodes from lithium cobalt oxide with surface layer containing, for lithium batteries for long cycle life)

IT 146613-43-6, Cobalt lithium titanium oxide (Co_{0.95}-1Li₀-1.1Ti₀-0.05O₂)
 RL: USES (Uses)
 (cathodes, for lithium batteries for long cycle life)

IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 RL: USES (Uses)
 (cathodes, with titanium-added surface layer, for lithium batteries for long cycle life)

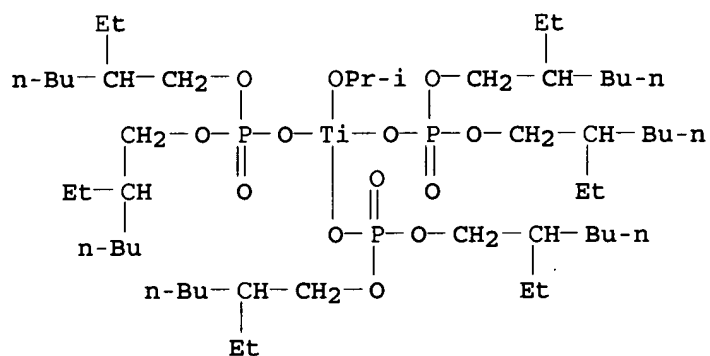
IT 61417-49-0, Isopropyltrisostearoyl titanate 65380-84-9, Isopropyltris(N-aminoethyl-aminoethyl)titanate
 RL: USES (Uses)
 (in cathode preparation from lithium cobalt oxide with surface-added titanium, for lithium batteries)

IT 65345-34-8P, Isopropyltris(dioctylphosphate)titanate
 RL: PREP (Preparation)
 (kinetics cathode preparation from lithium cobalt oxide with surface-added titanium, for nonaq.-electrolyte batteries)

IT 65345-34-8P, Isopropyltris(dioctylphosphate)titanate
 RL: PREP (Preparation)
 (kinetics cathode preparation from lithium cobalt oxide with surface-added titanium, for nonaq.-electrolyte batteries)

RN 65345-34-8 HCAPLUS

CN Titanium, tris[bis(2-ethylhexyl) phosphato-κO'''] (2-propanolato)-, (T-4)- (9CI) (CA INDEX NAME)



L44 ANSWER 26 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1965:49050 HCAPLUS

DN 62:49050

OREF 62:8670h,8671a-b

TI Electrosynthesis of p-nitrobenzoic acid

AU Kolevatova, V. S.; Kolesova, S. A.

SO Sb. Nauchn. Tr. Permsk. Politekhn. Inst. (1963), (14), 54-64

From: Ref. Zh., Khim. 1964, Abstr. No. 19L155.

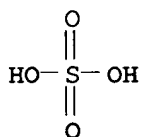
DT Journal

LA Russian

AB Oxidation of p-nitrotoluene (I) to p-nitrobenzoic acid (II) by electrolysis in H₂SO₄ was studied. The effects of the electrolyte composition (concentration of

H₂SO₄ and I), catalysts (type and concentration), anodic c.d. (Da), surfactants, and temperature on the current efficiency of II were investigated. Without catalysts, II can be synthesized in 50% H₂SO₄ with only addition of 20% HNO₃. Pos. results were obtained in H₂SO₄ solns. on Pb anodes and battery plates covered with a layer of PbO₂. A Hg cathode dissolved considerably. Optimum conditions were: I 50 g./l. H₂SO₄ 50%, catalyst (MnSO₄, CrCl₃, Ce₂(SO₄)₃) 15 mg./l., Da 3.5 amp./sq. dm., temperature 80°. Under all conditions the current efficiency of II was ≤1.5%. Higher current efficiencies were obtained in solns. containing K₂Cr₂O₇ but in this case I was chemical oxidized to II by K₂Cr₂O₇. Formation of II from electrolysis of an emulsion of I in H₂SO₄ takes place as a result of direct oxidation of I on the anode. I mols. are adsorbed on the electrode and then release electrons of the Me group, being oxidized thereby to II. In the presence of strong surfactants II does not form. Surfactant mols. occupy adsorption centers and thus prevent adsorption of I and its anode oxidation

CC 15 (Electrochemistry)
 IT Catalysts and Catalysis
 (in oxidation, of p-nitrotoluene, Ce₂(SO₄)₃, CrCl₃ and MnSO₄ as)
 IT Adsorption
 (of p-nitrotoluene by electrodes in p-aminobenzoic acid synthesis by electrolysis, surfactant effect on)
 IT Surface-active substances
 (p-nitrotoluene electrooxidn. in presence of)
 IT 7785-87-7, Manganese sulfate, MnSO₄ 10025-73-7, Chromium chloride, CrCl₃
 (catalysts, in oxidation of p-nitrotoluene)
 IT 13454-94-9, Cerium sulfate, Ce₂(SO₄)₃
 (in oxidation of p-nitrotoluene)
 IT 99-99-0, Toluene, p-nitro-
 (oxidation of, electrochem. in H₂SO₄)
 IT 621-82-9, Cinnamic acid
 (oxidation-reduction potential of)
 IT 62-23-7, Benzoic acid, p-nitro-
 (preparation of, electrochem)
 IT 7664-93-9, Sulfuric acid
 (p-nitrotoluene electrolytic oxidation in)
 IT 7785-87-7, Manganese sulfate, MnSO₄
 (catalysts, in oxidation of p-nitrotoluene)
 RN 7785-87-7 HCAPLUS
 CN Sulfuric acid, manganese(2+) salt (1:1) (8CI, 9CI) (CA INDEX NAME)



● Mn(II)

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